



TEAM AT WORK



Prin. (Dr.) D. R. More Director, BCUD



Dr. V. N. Shinde Ag. Registrar



Shri. Ajit Chougule Ag. Finance & Accounts Officer



Dr. D. K. Gaikwad NSS Co-ordinator



Shri, P. T. Gaikwad Head of Department (Sports)



Dr. G. S. Kulkarni Dy. Registrar (Civil)



Dr. N. P. Sonaje



Shri. Alok Jatratkar Ag. Director (Distance Edu.) Public Relations Officer



Shri. R. P. Yadav Junior Engineer



Shri A. K. Jadhav Superintendent (Garden) Sanitary Inspector



Shri S. S. Salunkhe

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Shri. V. D. Ardekar Oversear



Shri. G. B. Masti Mistry







Shri. J. D. Gavali Plumber

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Dr. D. K. Gaikwad **Alok Jatratkar Shirish Gavali**

Aerial Photography Vivek Jadhavar Suvij Movies, Kolhapur



From the Desk

It gives me immense pleasure to present a report about the 'Watershed Development on Campus of Shivaji University' during the year 2016.

In Maharashtra, the Western region of the State is blessed the most by nature; the atmosphere, the climate, the flourished agriculture, the industry, businesses and so on. The root cause of this flourishment lies in the blessings from

monsoon rains. Also, the visionary leadership has led this region towards the progress through cooperative movement.

However, in the year 2015, the State of Maharashtra faced severe drought condition also covering the western region of Maharashtra. This has paved way for everyone in the region to think and act seriously about the drought situation. At Shivaji University also, the authorities decided to make efforts in this direction to overcome the drought conditions and make the campus rich of water sources. My officers, employees and students collectively took efforts to accomplish and achieve the same. Especially, I must recognise the efforts taken by Dr. V.N. Shinde, Ag. Registrar of the University, to implement the concept of Watershed development on campus to the fullest. Apart from the existing water reservoirs, three farm ponds were created, newly and two wells were totally excavated and desedimented from which water storage of around 45 lac litres became possible.

At the outset, I would like to share the glimpses of dedication of my colleagues towards water resource management. It is a success story, which is worth commending.

On 9th July 2016, heavy rainfall was occurred. Although it was the official holiday, my colleagues and members of our team, continuously kept track of increasing water levels, at our reservoirs and farm ponds. Our teams' high concern over the preservation and safety of those reservoirs and ponds, drived them to have 24 hours vigilance at these locations. Through a wonderful communication and team spirit, our Engineering Section personnel, reported developments of water levels and overflowing reserviors, every minute. This enabled our officers and staff of Engineering Section, to promptly undertake precautionary steps and necessary arrangements at farm ponds which initially were reported, under threat.

My colleagues Prin. (Dr.) D. R. More, Director, BCUD, Dr. V. N. Shinde, Ag. Registrar, Dr. D. K. Gaikwad, NSS co-ordinator, Dr. G. S. Kulkarni and all their staff has done outstanding job by staying on field to protect the water reservoirs, newly created. I am proud of them all. I must also mention the active participation of the Physical Directors' and the NSS students, towards the success of this mission.

Here, I present you the report showcasing, the glimpses of the watershed development on the campus of Shivaji University. During last few months, this work has been a part of our daily routine and I look ahead to it's continuation, for inculcating the culture of water conservation, through the generations.









Preface

Shivaji University is a premier higher education centre of Southern Maharashtra with 853 acres of land. Shivaji University was established on 18th November 1962. With its high values and standards in providing higher education and socio-cultural contributions, it's not surprising that the University has achieved 'A' grade in accreditation from NAAC, Bengaluru and has ranked 28th in the Country in the NIRF ranking declared by the Ministry of Human Resource Development, Govt. of India.

With having the sprawling area of 853 acres of the University, since its inception, the leaders of the University had always strived and tried for beautification and biodiversity of campus. The landscape and attractive circular garden in front of the Main Administrative Building, with the Statue of the Great Maratha Warrior Chhatrapati Shivaji Maharaj has become the all-time centre of attraction and inspiration to our students and visitors as well.

Previously, it was much possible to maintain the need of water for various departments and garden from the lone bigger source Rajaram lake situated on campus. It is owned by the Irrigation Department, Govt. of Maharashtra. However the increasing number of departments, students, staff and other developments of campus, enhanced the need to create more sources of water.



How it all started?

Apart from the water resource of Rajaram lake, another two wells were the source of water on campus. But, these found insufficient to meet the growing needs of campus. The campus is having five boys' and four girls' hostels with capacity of nearly 3500 students, which always run at their full capacity. Campus has 140 staff quarters with nearly 100 families residing there and 39 academic departments. Well-equipped laboratories at science departments also need sufficient water. Apart from these, the welldeveloped garden is spread across 37 hectors require much water.

The daily need of potable water is five lac litres and non-potable water is six lac litres, which cost nearly Rs. Seven lac per month. To reduce monthly expenses on water University started water conservation and rain water harvesting projects.

In 2001-02, University started the creation of lake at the backside of V.S. Khandekar Bhasha Bhavan, which was completed in 2005 with the capacity of 8.53 million cubic ft. University spent Rs. seventy lac for construction of this lake.



In 2005, major steps were taken towards rainwater harvesting, covering all buildings on campus. Mainly, rainwater from the rooftop of the building was collected in a tank nearby and was lifted for general water usage in rainy season. Accordingly another site was identified for new lake. A small and beautiful lake was created, using its natural geographical structure near department of Music with the capacity of 2.83 million cubic ft and with the expenditure of just Rs. 24,59,100/-. The construction of this lake was completed in 2006.

In 2013, in order to fulfill the increasing need of water, a well of nearly 100 ft diameter and of 80 ft depth was excavated near department of Sports. In addition, another well was constructed in 2014, to fulfil the needs of Lead Botanical Garden developed by the department of Botany. A filter house to convert the well water into potable water was also constructed near Library building. Now, the University campus use the self filtered water almost annually. However, in 2015-16 these sources found in sufficient to meet the requirement of the campus on drought situation.



Necessity to do more...

With continuous efforts during last decade, University campus became much selfreliant, restricting the need to purchase potable water from Kolhapur Municipal Corporation that too only during 2 or 3 months of summer. But, due to short rainfall during the year 2015-16, even this region had to face a never before draught situation with scarcity of water. The University campus was obviously no exception, and compelled to reschedule and complete the academic and examination time tables a month before i.e. before 15[®] of April. Considering the gravity of the water scarcity on campus and reviewing the situation, Dr. Devanand Shinde, Vice Chancellor of the University expressed the need for more attempts to store more water and more projects for it. Prin. Dr. D.R. More, Director, BCUD, Dr. V.N. Shinde, Ag. Registrar, Dr. D.K. Gaikwad, DSW and coordinator, NSS, Dr. G.S. Kulkarni, Dy. Registrar (Civil) and Shri. P.T. Gaikwad, Director, Department of Sports played instrumental role in bringing the dream to reality.



What was done?

The work for water conservation, as desired by the Hon Vice Chancellor Prof. Devanand Shinde was started in April 2016. It was done on four different levels under the under surveillance of the Registrar Dr. V.N. Shinde with team from Engineering section headed by Dr. G. S. Kulkarni, Deputy Registrar (Civil) and NSS headed by Dr. D.K. Gaikwad. These are:

- i) Creation of Farm ponds,
- ii) De-sedimentation and rejuvenation of wells,

- iii) Creation and renovation of trenches all over the campus and
- iv) Recycling of water.

The work was initiated on 14th April 2016, with NSS Volunteers' Camp and was concluded into the development of farm pond with the help of Physical Directors' Association. Scheduled work was completed on 5th July 2016.





Creation of Farm Ponds

Creating water reservoirs in addition to the existing one, was the need of hour. Hence, the location near Sutar well was identified for creating new farm ponds due to its sloping geographical structure. The flowing water, possibly every drop, was decided to collect at these ponds. Unlike the routine practice of creating those farm ponds using plastic sheets, here it was decided to avoid the use of plastic.

It was decided to create 3 ponds to control pressure of flowing water. Recognizing the importance of the work undertaken by the University, 'Shivaji University Physical Directors Association' came forward with assistance of JCB machine for two days and developed the first farm pond. Another pond was created with the help of University tractor and NSS Volunteers. Engineering Section of the University developed third pond. These ponds are created in such a manner to collect water serially, one after another and are connected to each other with trenches. The reservoirs have total capacity of 40 lac litres with capacity of 5 lac litres, 10 lac litres and 25 lac litres, respectively. The total actual expenditure for this project was Rs. 1,25,000/-. It is proposed to develop two more ponds, in forthcoming year.





De-sedimentation & Rejuvenation of Wells

As of now, University campus is having eight wells. Out of them six wells are old and the University extract water from Sutar well in rainy season for potable water. Another well is used by Botany Department to maintain their Lead Botanical Garden. Remaining four wells remain unutilized. Two wells were created in 2014 to meet water requirement and one of them is used for boys hostel and another is used for Botany Department. University has decided to bring two (out of four unutilized wells) wells under use, this year. The well near Synthetic Track and another well (Shinde well) near Sutar well, were desedimented completely which earlier contained very less water. The work of desedimentation and rejuvenation was under taken after studying the underground water resources of these wells. Nearly 60 ft. and 30 ft. sludge was removed out of it, to activate ground water resources. During summer itself, water from few sources started activating in wells. Though, quantity of water was small, it was a great success.

After de-sedimentation those wells were constructed with compound wall to avoid any mishap. The total actual cost of de-sedimentation and construction was approximately Rs. six lac. It is proposed to de-sediment remaining two wells in the forthcoming year.



Shinde Well found near Sutar Well



Creation of Trenches all over the Campus

On the backdrop of severe drought situation, it was decided to conserve a single droplet of water on the campus. For that, few trenches were created to carry water towards various reservoirs on the campus. The Civil **Engineering Section created Trenches of total** length of 2.5 km without disturbing natural direction of water flow. Those included the trench from Chemistry Dept. to backs side of Botany Department (390 mtr), Statistics Department to Bhasha Bhavan (510 mtr), Boys Hostel (West side) to farm pond (300 mtr), Electric substation to Printing Press (200 mtr). Also, four trenches of 315 mtr each were created from the west side of Synthetic Track towards Bhasha Bhavan lake (Total of 1260 mtr). The cost of creating trenches was Rs. 50,000/-.







Recycling of Water

Waste water recycling was considered as the best option of water usage. Underlining this fact, Shivaji University has established two recycling plants in 2008-09 and 2013-14. First plant was established near women's hostel where 60 thousand litre water is recycled per day. Another plant is established near boy's hostel at Department of Technology, where 50 thousand litre water is recycled.

This recycled water is used for the garden and campus beautification through drip lines accross the gardens. The gardens of old and new library, garden adjecent to statue of Karmaveer Annabhau Patil, garden of Humanities building and north circle garden is irrigated with the recycled water from the recycling plant near Ladies Hostel. The gardens in the area of Department of Technology are irrigated with the recycled water from their hostel.





The Result

Mere two days of heavy rain on 9th and 10th July 2016, resulted into (containment) overflowing, of all water reservoirs on the campus to their fullest capacity. The total 28 crore litre water was stored on the campus. This includes Bhasha Bhavan lake (22.15 Crore ltr.), Music department lake (5.20 crore ltr.), Sutar well (4 lac ltr.), Sports department well (4.87 lac ltr.), Chemistry department well (3 lac ltr.), Sythetic track well (5 lac ltr.), Shinde well (3 lac ltr.) and newly formed farm ponds (40 lac ltr.). All the lakes and wells are overflowing with the attempts made by the University. The success is witnessed by water reservoirs at full capacity. Especially, Bhasha Bhavan lake got overflow this season for the first time, ever since 2005.

Now, from 11th July 2016, onwards Shivaji University started its filter house and stopped using the water supply from Municipal corporation. The requirement of water for campus, is now fulfilled from the reservoirs on campus including potable water.





Aerial View of reservoirs on campus

The Benefits

- The first and foremost benefit is that the storage of nearly 28 cr. litre water is created on campus.
- From those reservoirs University uses 10 lac litres of water every day.
- The water purchasing from KMC is totally stopped which resulted into saving of Rs. 6 lac per month.

With this storage, University campus can sustain for at least nine to ten months i.e. upto March 2017.

- If rainfall continues with the same rate, University campus could be self-reliant for a complete year including summer days.
- With such a wonderful experience, the University will continue with its efforts and experiments of farm ponds and plantation, creating more water reservoirs on campus, resulting into larger benefits with small expenditure.





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विकास अध्येक्रम शानी चेतला होगा. चेन

जेत्राजे विकस्तित करण्यात अस्ती होती.

हा तोनही पोलडफी पूर्व सारदेने भरती

आइत. प्रथमेवरव किर्यापेठ परित्तानीत

तीम वितिग्रेणगेषाचे पुससम्प्रांस केलेल्या

1 मुर्ग्रहांगरताले रचतलेल्या जलन्म

विकास आर्यक्रमणे पतिः असल्पाः

चोरणेपुत्ते जायोक्तर था. यो. जात. मॉर

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चीनी महीरताने

जिमवाकी विद्याविद्यानील आफ ध्यम वेखील मन्द्रव पूर्ण अपसेन धराज अगह.

विद्यापीठातील तलाव

झाले ओव्हर-फ्लो

य, ता. प्रॉल्टिन्सी, क्रोस्ट्रापुर

रेल्य गार दिवसीणपुर कोल्हापुर

र्थाप्रमात सुरू इ.स.चेन्या मंदरधार

पातनामुळे चेथ्रांन विश्वाची निर्धाचेत

परिजगतील यूनं प्राण्डदे आज ' जोश्हन-

पत्ने' इतने, विद्याल प्राणक्ते प्रम २०१९ मेता

इसीही न पाटिस ते. स. खाँदेका पाय

भूखनाभागीत जलाख ज्यार दिसमोतना सीम

हांद्रे परून यह लागल जोते. दृष्टाद्याच्य

अगरेएगेल, कुलगुरू था, देवावर किरे

योच्या 'प्रमंदरणाखाला विद्यार्थता रे ठला

देखनगण पोलनार विकास कार्यक्रमोलण

विस्तेन अपनात आर्थलो सेन संवत्तओले

रोत दिवणांतल पूर्ण श्रमतेने घाली. भाषां विद्यप्रेता पत्य प्रकारणील

यंदा पहिल्यांदाच पाणवठे तुडुंब; विद्यापीठाचा परिसर बनला पाणीदार

कोल्लावर : प्रतिनिधी

भुवभारणतराषुके के बाब नेपार्ड अप्रिस्ट तील सल न भागके, संस्वाधीना मिलिंग इन भारत यह ताम या व्यक्त २००५ मंतर आजन्मायर क्योरी पगन पर्व्लला हि.स. खविहर, 14. III SCHOOL SHOP SHOTS ATTAC ביוה איזו אוג - וואאו राष्ट्रांस अलग उन्हे शिवान विद्यादिल



णिवाली विदयप्रैठात सहेब अस्तन बाहन अधलेल्या सलावाचे दृश्य.

THE REAL PORTS ATTER बगेल में- प्रेल्टल प्रेस विगोध करण्याः अस्तियेतं भगीत THE PARTY PRIME REPORT OF ज्यात यह जार देख भारतमारत परिषयम ਜਿਹਾਸ਼ੇਠ ਨੀਜ 🗇 ਸਤੋਂ ਗੁੜੁੱਕ ਪਾਲੇ आंज विद्यार्थायारील प्राणीलाई WINCE SHE THURSDAY THE TABLE 4110 14 14 mildar

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राण्याच्या सिंही बादसांस करन आहे.

तलावाची नावे व पाणी हमता

- भाषा भवना तलाव (२२ कोटी १५ लाख जिटर)
- संगीत अधिविभाग तलाब ('n कोटी २० लाख सिटर)
- · HOTH Regly ('Y MIRE MCY)
- कीता अधिवेभाग चेहीर (४.८३ लाख लिएर)
- रसायनशास्त्र अधिविभाग विहीर (३ लाख लिटर)
- मिन्द्रोक ट्वारोजासेल विहार (५ लाख लिटर)
- । शिदे विडी२ (उ लाख)
- तीन शेलतजी (एकूण ३५ लाख लिटन)

आवायन प्रभारे कृत्यपुरु मी. थी. आग April al moreated and and an गीरे गडनासी, जिल्लावीयमें। जसगढन करवान्द्र साम जिलाग आहे





Members of Physical Director's Association contributed in the construction work of farm ponds on University campus.

Participation of NSS Volunteers in Construction of Farm pond.



Total Capacity of Water Reservoirs on Campus in Litres



Bhasha Bhavan Lake	:	22.15 Cr.
Music Department Lake	:	5.20 Cr.
Sutar Well	:	4.00 Lac
Well near Sports Dept.	:	4.87 Lac
Well near Chemistry Dept.	:	3.00 Lac
Well near Synthetic Track	:	5.00 Lac
Shinde Well	:	3.00 Lac
Three Farm Ponds	:	40.00 Lac

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WATER IS THE DRIVING FORCE OF ALL NATURE. - Leonardo da Vinci

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31,400,20

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