सत्यमेव जयते

Report of the Comptroller and Auditor General of India on Performance Audit on Drinking Water Services in Himachal Pradesh

SUPREME AUDIT INSTITUTION OF INDIA
लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

सत्यमेव जयते
हिमाचल प्रदेश सरकार

Government of Himachal Pradesh

Report No. 1 of the year 2023

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Comptroller and Auditor General of India

on
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PREFACE

This Report of the Comptroller and Auditor General of India for the year ended 31 March 2021 has been prepared for submission to the Governor of the State of Himachal Pradesh under Article 151 (2) of the Constitution of India.

The Report contains significant results of performance audit of Drinking Water Services in Himachal Pradesh conducted in terms of the Comptroller and Auditor General of India (Duties, Powers and Conditions of Services) Act, 1971.

The audit has been conducted in conformity with the Auditing Standards issued (March 2017) by the Comptroller and Auditor General of India.

Executive Summary

Executive Summary

The steady increase in human population, widespread technological modernization, new and unsustainable lifestyle have invited and aggravated the problem of water scarcity. The right to access to drinking water is fundamental to life. The constitutional right to access to clean drinking water has been drawn from the right to food which has been protected under the broad heading of right to life guaranteed under the Constitution.

The state of Himachal Pradesh is richly endowed with a hilly terrain having an enormous volume of water from the catchment areas of Satluj, Beas, Ravi, Yamuna and Chenab rivers. The requirement of water in the State was 454.53 million litres per day (MLD) (Rural: 384.32 MLD and Urban: 70.21 MLD) during 1999 and was projected to increase to 726.46 MLD (Rural: 575.97 MLD and Urban: 150.49 MLD) during 2021.

Keeping in view the significance of providing adequate and safe drinking water to the people, a Performance Audit on Drinking Water Services in Himachal Pradesh was conducted for the period 2016-21.

The Performance Audit covered the period from 2016-21. Records of the offices of Engineer-in-Chief, Director (WSSO), Chief Engineers of all four zones, Superintending Engineers of eight (out of 13) circles (two from each of 4 zones) selected on the basis of Random Sampling, were scrutinized. The audit sample included 20 divisions which were selected for detailed check. Besides, 55 drinking water supply schemes (40 completed and 15 incomplete), which were funded by various programmes viz. National Rural Drinking Water Programme (NRDWP), Jal Jeevan Mission (JJM) and other State programmes, were selected in 20 selected divisions for evaluating their performance. Survey of 1109 beneficiaries/ residents (of 40 selected completed schemes) for assessment of delivery and quality of water services was also conducted.

For institutional framework, State Water and Sanitation Mission (SWSM), State Level Scheme Sanctioning Committee (SLSSC), State Technical Agency (STA), District Water and Sanitation Mission (DWSM) and Village Water and Sanitation Committees (VWSCs) were constituted by the State. State Water and Sanitation Mission, State Level Scheme Sanctioning Committee and District Water and Sanitation Missions conducted fewer number of meetings than required and decisions taken in these meetings were also not addressed/ implemented. Service of State Technical Agency were not utilised as no Detailed Project Reports (DPRs) were sent to State Technical Agency for vetting. Village Water and Sanitation Committees had not participated in the activities including planning, monitoring, implementation and operation and maintenance of rural water supply schemes.

The State did not formulate any long-term comprehensive water security plans at state level and village action plans at village level, signifying absence of bottom-up approach and community participation in the planning of schemes. Besides, water supply schemes had not been transferred to communities and Panchayati Raj Institutions for their management and augmentation.

Funds were seen withdrawn without immediate requirement and funds received from Deputy Commissioners and Municipal Councils/ Corporations were lying unspent in deposit head for a period of five to 79 months. Besides, funds received under National Bank for Agriculture and Rural Development, Jal Jeevan Mission and National Rural Drinking Water Programme were diverted outside the scope of the programmes.

Avoidable payments of contract demand charges, contract demand violation charges and energy charges where even nil energy consumption was recorded in water supply schemes were made to Himachal Pradesh State Electricity Board Limited.

Water charges of ₹ 9.35 crore had not been recovered from consumers as of March 2021 in test-checked divisions. In one division, embezzlement of ₹ 27.42 lakh was noticed in Audit. Also, ₹ 12.02 lakh of water charges were lying deposited in a current account instead of crediting the same in receipt head of the government account. In another instance, ₹ 8.55 crore of water charges from Municipal Council Palampur was to be recovered.

In areas of nine lift water supply schemes in five test-checked divisions, against design of supply of 70 litres per capita daily (lpcd) in rural areas and 120 lpcd in semi urban areas, water supply ranging between 22 and 67 lpcd was being provided for rural areas. In semi urban areas 73 lpcd was being supplied to beneficiaries.

In 15 divisions, there was huge difference in Functional Household Tap Connections (FHTC) data as per Integrated Management Information System (IMIS) and consumers' ledgers. The difference in FHTCs indicated that data had been artificially inflated and coverage of households was much below that shown in IMIS.

Component-wise deficiencies were noticed in the sources of water and water treatment plant of completed test-checked schemes such as construction of borewell/ percolation well in the middle of the *Khad*, non-construction/ utilisation of intake chamber, percolation well and pump house, supplying of water without filter media, non-repair/ utilisation/ cleaning of sedimentation tank.

There were several deficiencies relating to pumping machinery, rising/ gravity main and distribution network of the schemes in some of the test-checked divisions, such as out of order pumping machinery, non-functional schemes due to non-connection of electricity meter, non-installation of Auto Transformer Starters and non-operation of water supply schemes upto their optimum capacity. Also instances such as non-laying of gravity main/ distribution network, non-construction of anchor thrust block, non-construction of underground reservoir/ tank and leakage in distribution network were noticed.

Out of the 1109 beneficiaries of the completed schemes surveyed by Audit, 21 *per cent* were not satisfied with the quality of water being supplied whereas, 26 *per cent* of the tail end beneficiaries (out of 574) stated that they did not have access to adequate supply of water.

The State has not operationalised its own State laboratory as of March 2021. In the other 59 water testing laboratories (district laboratories: 14 and sub-divisional level: 45) in the State, National Accreditation Board for Testing and Calibration Laboratories accreditation was not obtained for 16 sub-divisional laboratories. The laboratories did not have sufficient

infrastructure and equipment which affected their testing capabilities. Besides, 98 *per cent* of the samples that were required to be re-tested by State laboratory during 2019-21, were not tested by the Department.

The targets of bacteriological and chemical tests of water sources in the State were not commensurate with the quantum of tests required to be conducted during 2016-21. Remedial action was not taken for failed bacteriological/ chemical tests. Also, fictitious reporting of tests was found in Kullu division. Accuracy of water sample test could not be assured as variation was seen in tests conducted for same water sample at two labs in district Chamba.

Residual chlorine levels were not tested through chloroscopes to monitor the bleaching of the drinking water. Also, bleaching powder was issued for chlorination after their useful life.

There was shortfall of staff in the department ranging between 11 *per cent* and 24 *per cent* while in the laboratories there was huge shortage of staff ranging between 73 *per cent* and 74 *per cent*.

Vigilance and monitoring committees were not set up at the State, District and Village levels to monitor the functioning of the department and status of execution of schemes. Review committee at apex level was not formed to review the progress of the works costing ₹ 5.00 crore and above. Third party inspection was not conducted before releasing of payments to contractors.

Huge numbers of water supply complaints were outstanding as of March 2021 and proper records of noting and redressing of complaints were not maintained at the departmental level.

Recommendations

In the light of the audit findings, the State Government may like to ensure that Village Water and Sanitation Committees participate in planning, monitoring, implementation and operation and maintenance of rural water supply schemes and that schemes are monitored regularly by SWSM, SLSSC and DWSM. Comprehensive water security plans may be formulated as per village water security plans to ensure bottom-up approach and community participation in planning and execution of water supply schemes.

It should be ensured that allocated funds are optimally utilised and irregular diversion of drinking water funds for other areas/ works may be avoided. The existing Online Himachal Pradesh Water Bills App may be used for raising, collection, realisation and deposit of water charges so as to avoid any misappropriation, delay in depositing of Government revenues in treasury, besides enhancing transparency and convenience to the consumers.

Immediate remedial steps may be taken to ensure both quality and minimum quantity of promised drinking water to citizens by repairing and augmenting the water supply installations. Accreditation of all laboratories from National Accreditation Board may be ensured. At the same time adequate and qualified staff may be engaged for the laboratories.

For adequate monitoring and vigilance, Vigilance and Monitoring committees need to be set up. It is essential that the Review committee at apex level for review of progress of major works costing ₹ 5.00 crore and above is constituted urgently.

Chapter-I
Introduction

CHAPTER-I

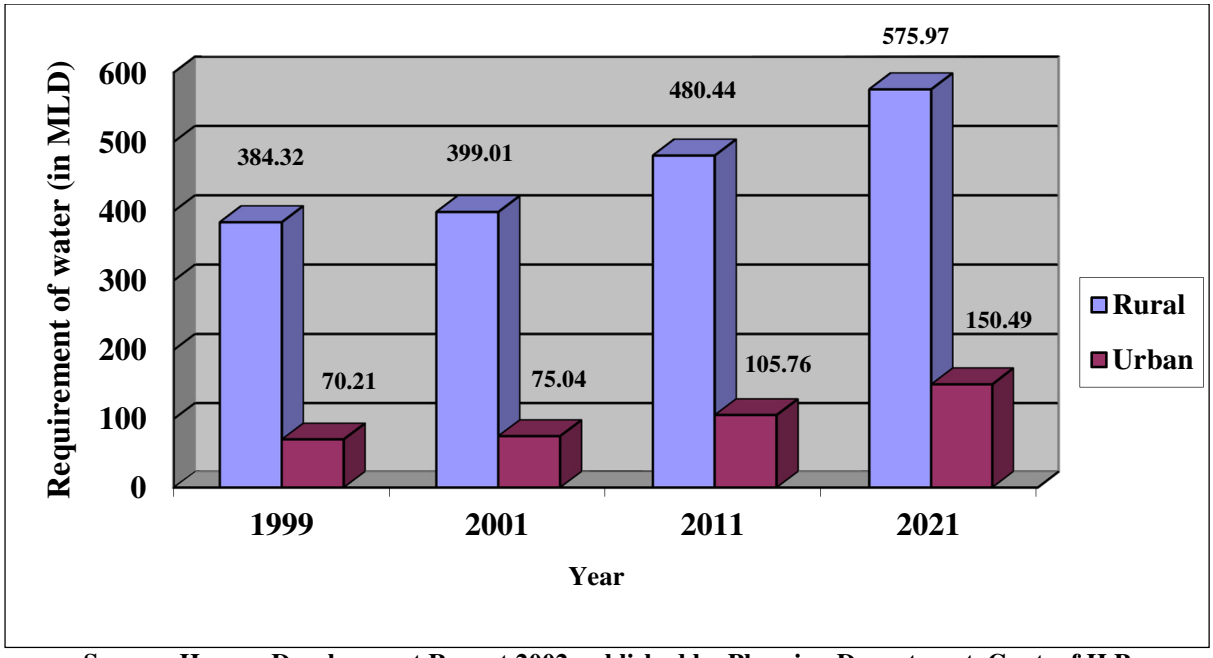
Introduction

The steady increase in human population, widespread technological modernization, new and unsustainable lifestyle have invited and aggravated the problem of water scarcity. The right to access to drinking water is fundamental to life. The constitutional right to access to clean drinking water has been drawn from the right to food which has been protected under the broad heading of right to life, guaranteed under the Constitution. The theme of providing safe drinking water has also been included by the United Nations in its Millennium Development Goals (MDGs) and subsequently in the Sustainable Development Goals (SDGs). SDG 6: 'water goal', is to ensure availability and sustainable management of water and sanitation for all, among others.

1.1 Requirement of drinking water in Himachal Pradesh

Himachal Pradesh is located in the western Himalayas covering an area of 55,673 square kilometers. As per Census 2011, the State population was 68.65 lakh, an increase from figure of 60.78 lakh in Census 2001 and was 0.57 *per cent* of India's population. The requirement of water in the State was 454.53 million litres per day (MLD) (Rural: 384.32 MLD and Urban: 70.21 MLD) during 1999 and was projected to increase to 726.46 MLD (Rural: 575.97 MLD and Urban: 150.49 MLD) during 2021 as depicted in **Chart-1.1**.

Chart-1.1



Source: Human Development Report 2002 published by Planning Department, Govt. of H.P.

1.2 Water sources of Himachal Pradesh

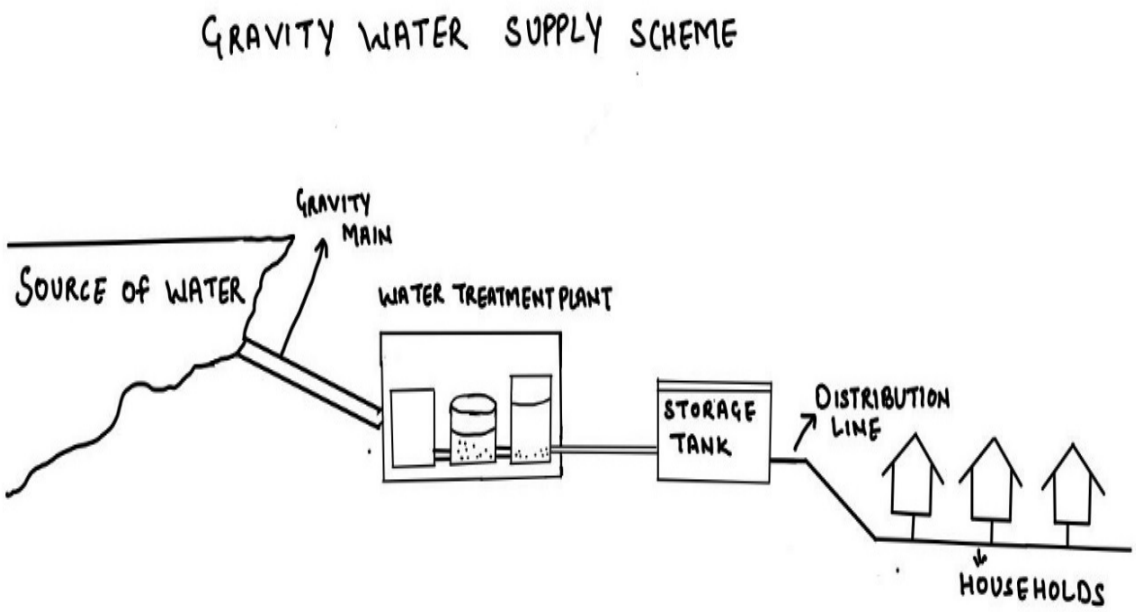
The state of Himachal Pradesh is richly endowed with a hilly terrain having an enormous volume of water from the catchment areas of Satluj, Beas, Ravi, Yamuna and Chenab rivers. Drinking water is also supplemented from other sources (Ground water: springs, tube wells,

etc.; Surface Water: (rivers, *khad*[1]*, Nallah,* lakes, etc.; rainwater and traditional/ conventional sources: *Boaries*[2] and *Khatries*[3]). There are approximately 1.96 lakh number of water sources[4] in the State as of March 2021.

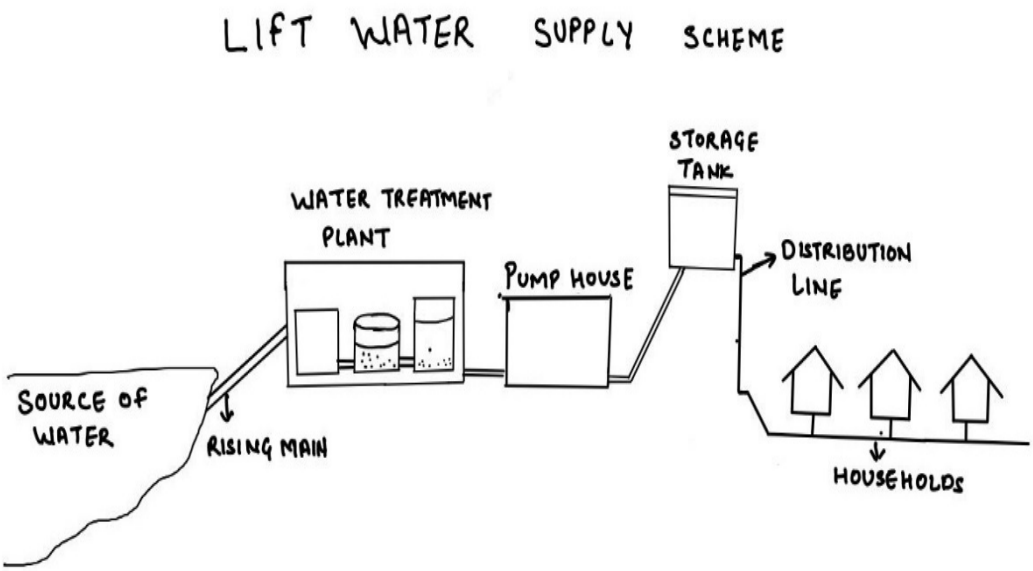
Drinking water is supplied to the population through gravity water supply schemes and lift water supply schemes. Under gravity water systems the water is transported through gravity from the source to users through a piped network without use of any external energy. In Lift water system, water is transported by using external energy through fuel based or electric power using pumps.

Main components of water supply schemes in the State include source of water, rising/ gravity main, water treatment plant, pump house, storage tank and distribution line.

Schematic presentation/ diagram of gravity water supply scheme



1 *Khad* is a small rivulet in hilly area.
2 *Boaries* are stepwells, ponds or wells in which the water is accessed by climbing down a series of steps.
3 *Khatries* are man-made water wells.
4 Information supplied by the Department



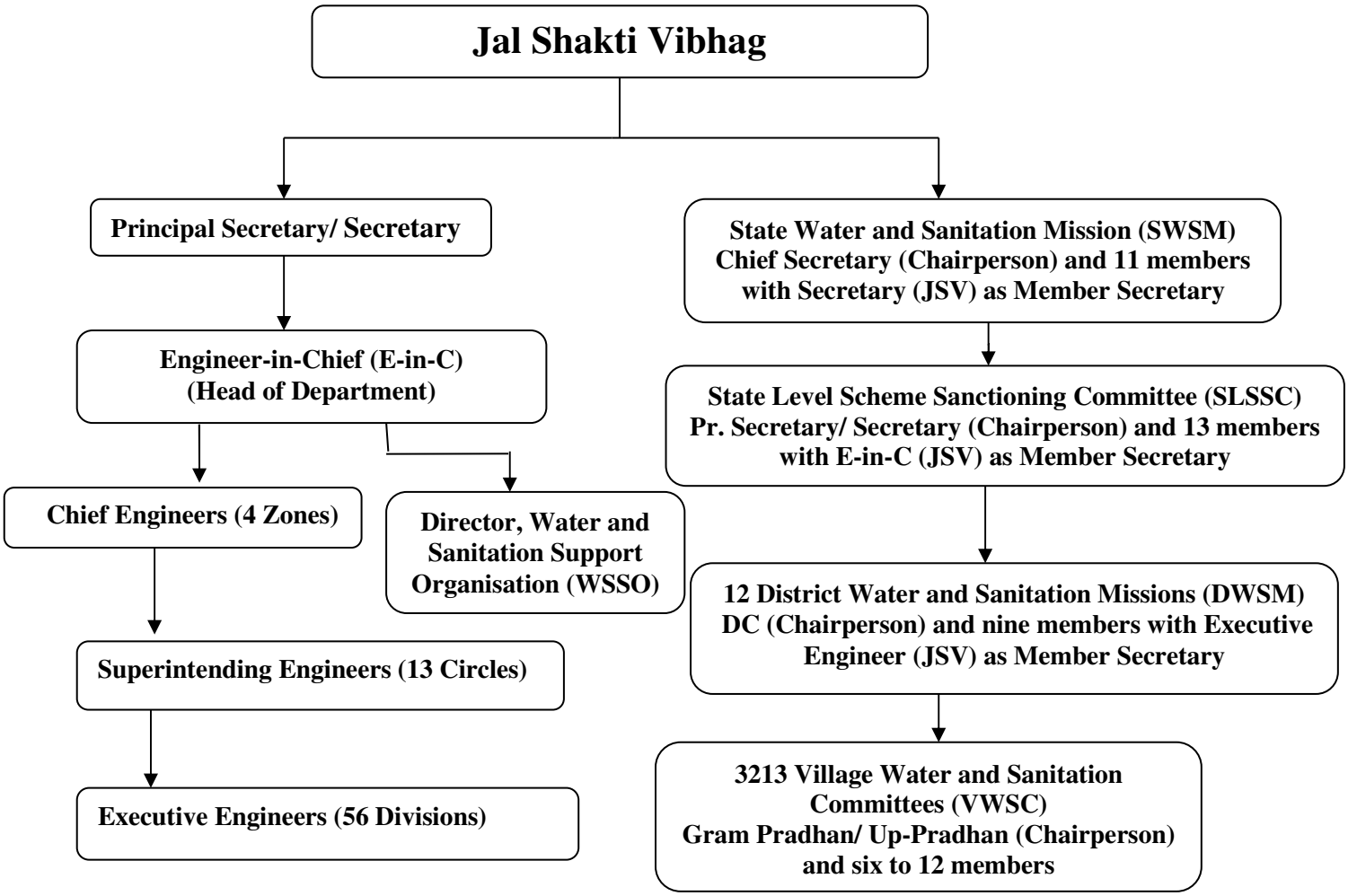
1.3 Drinking water supply programmes

Water is a state subject, and the State Government is responsible for ensuring access to a minimum quantity of potable water. Government of India (GoI) supplements the efforts of the State Governments with technical and financial assistance for provision of safe drinking water to the habitations in the State. In Himachal Pradesh, *Jal Shakti Vibhag* (JSV) (erstwhile Irrigation and Public Health (IPH) department), is responsible for providing drinking water services. It is the nodal department in the State for development, execution, operation and maintenance of water supply schemes. The schemes are approved under GOI programmes {National Rural Drinking Water Programme (NRDWP)/ Jal Jeevan Mission (JJM)} and State programmes for Rural/ Urban Water Supply Schemes. A majority of water supply schemes in the State are executed, implemented and monitored through departmental regulations and under guidelines of NRDWP/ JJM.

1.4 Organisational set up

Organogram of the JSV for providing drinking water services is given in **Chart-1.2**.

Chart-1.2

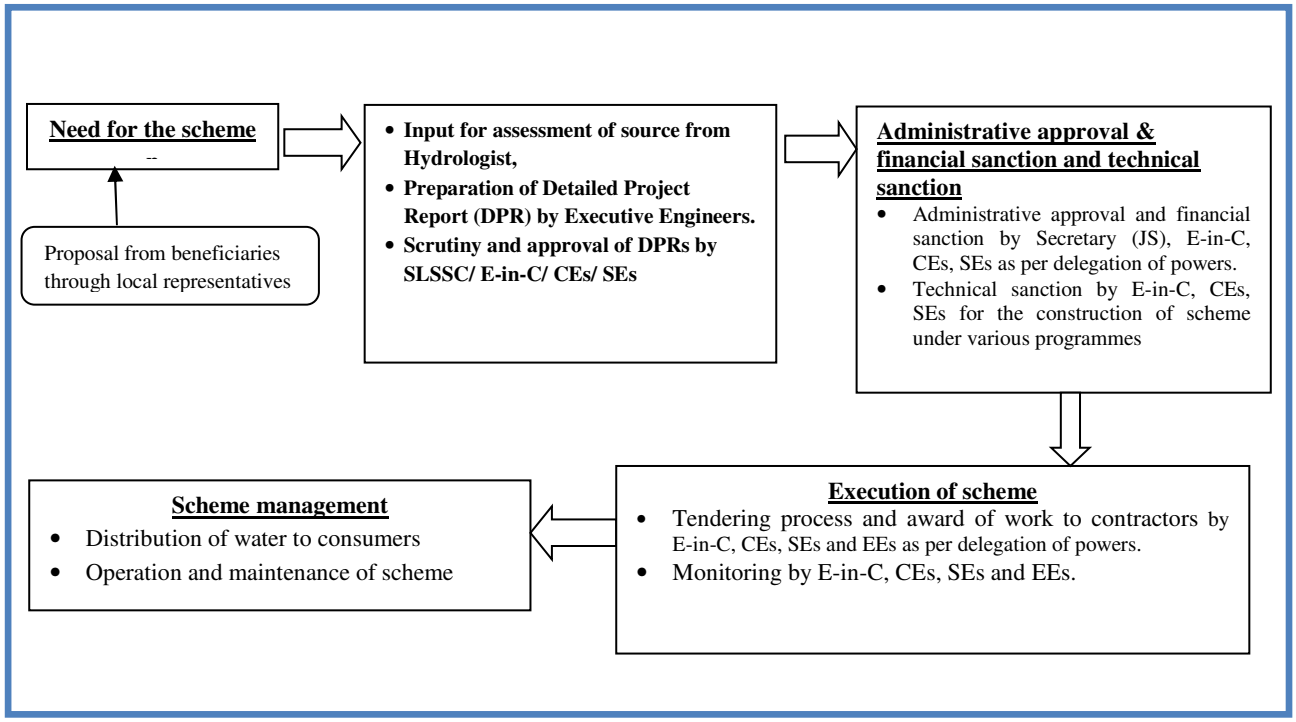


The departmental machinery is complemented by the missions which were established to involve the community in planning, implementation and management of water supply schemes. The SWSM seeks to provide policy guidance for community led and participatory projects. The mission structure seeks to bring synergy and drive with latest knowledge. In addition to regular officials, it hires subject experts. It has representation from PH engineering, project management, finance management, IT, IEC, capacity building and training and NGO coordination.

1.5 Process for approval of the drinking water supply schemes

The Jal Shakti Vibhag (JSV) is responsible for planning, construction, operation and maintenance of water supply schemes. The process of approval and execution of a water supply scheme is shown in the following flow **Chart-1.3**.

Chart-1.3



1.6 Audit Objectives

The objectives of the performance audit were mainly to assess whether:

- The envisaged institutional mechanism for implementation of the drinking water programmes/ schemes was functioning effectively;
- Funds management was economical and efficient;
- The implementation of the programmes/ schemes was effective and efficient;
- Adequate and effective mechanism existed for monitoring and evaluation of the programmes/ schemes; and
- Households are satisfied with the drinking water services.

1.7 Audit Criteria

The sources for audit criteria include the following:

- Central Public Health and Environmental Engineering Organization (CPHEEO) Manual;
- Uniform Drinking Water Quality Monitoring Protocol, 2013;
- Himachal Pradesh Water Policy 2013;
- Guidelines for Implementation of National Rural Drinking Water Programme (2013) and Jal Jeevan Mission (2019);
- Orders and instructions issued by the GOI and State Government;

- HP Financial Rules & HP Treasury Rules; and
- Procedures prescribed for monitoring and evaluation of schemes/ programmes.

1.8 Audit Scope and Methodology

The Performance Audit covered period from 2016-17 to 2020-21 and was conducted during July 2021 to March 2022. Records of the offices of E-in-C, Director (WSSO), Chief Engineers of all four zones[5], Superintending Engineers of eight (out of 13) circles[6] (two from each of 4 zones) selected on the basis of Random Sampling, were scrutinized. Records of the offices of Executive Engineers of 20 (out of 56) divisions[7] in the selected circles selected on the basis of Stratified Sampling Technique were also test-checked. In the above 20 divisions, 40 drinking water supply schemes (lift water supply schemes: 23 and gravity water supply schemes: 17) out of 457 drinking water supply schemes completed during 2016-21 and 15 incomplete drinking water supply schemes were scrutinized in detail. Besides, survey of 1109 beneficiaries/ residents (of 40 selected completed schemes) for assessment of delivery and quality of water services was also conducted.

An entry conference with the Secretary (JS) was held in August 2021 wherein the objectives, scope, criteria and methodology of audit were discussed. Audit findings have been drawn after scrutiny of records, analysis of available data by issue of questionnaires, audit memoranda and obtaining responses of the departmental functionaries at various levels. The audit findings were discussed with the Secretary (JS) and departmental officers in the exit conference held on 5thDecember 2022 and the views of the Department have been incorporated appropriately in the Report.

1.9 Acknowledgement

The office of the Principal Accountant General (Audit), Himachal Pradesh, acknowledges the co-operation and assistance extended by the departmental functionaries / authorities and beneficiaries during Audit.

[5] Dharamshala, Hamirpur, Mandi and Shimla.
[6] Bilaspur, Chamba, Dharamshala, Hamirpur, Kullu, Mandi, Reckong Peo and Shimla,
[7] Baggi, Bhoranj, Bilaspur, Chamba, Chountra, Dalhousie, Dharamshala, Hamirpur, Jhandutta, Kaza, Keylong, Kullu, Mandi, Matiana, Palampur, Rampur, Reckong Peo, Salooni, Shimla and Thural.

Chapter-II
Institutional Mechanism and Planning

CHAPTER-II

Institutional Mechanism and Planning

An institutionalised mechanism is essential for successful implementation of a programme/ scheme and achieving the intended objectives. It envisages participation of relevant agencies at State/ District/ Village levels, for effective planning and implementation of drinking water services. Planning with adequate participation at all levels is critical for successful implementation of various activities of a programme/ scheme to provide adequate and quality drinking water supply to every household leading to improvement in living standards of communities.

Part-I Institutional mechanism

Institutional mechanism in the form of SWSM, SLSSC, State Technical Agency, DWSM and VWSCs was non-functional and hence ineffective for policy guidance, technical support and monitoring.

2.1 Institutions constituted

(i) State Water and Sanitation Mission Society

To achieve coordination and convergence among State Departments dealing with rural drinking water supply, health, education, etc., guidelines of National Rural Drinking Water Programme (NRDWP)/ Jal Jeevan Mission (JJM) stipulate for setting up of State Water and Sanitation Mission (SWSM) under aegis of *Jal Shakti Vibhag*. The SWSM was to provide operational flexibility to the States for integrated implementation and institutionalising community participation under rural water supply programmes.

The State Government constituted (July 2009 and reconstituted in May 2020) the SWSM as a registered society comprising Chief Secretary to the Government of Himachal Pradesh as Chairperson, Secretary (IPH/JS) as Member Secretary and nine members (Additional Secretary & Mission Director JJM of Department of Drinking Water Supply, Additional Chief Secretary of Health & Family Welfare Department, Principal Secretary of Finance and Education Department, Secretary of Rural Development & Panchayati Raj, Information & Public Relation, Engineer-in Chief of *Jal Shakti Vibhag* and State representatives of Central Ground Water Board and Central Water Commission).The SWSM provides policy guidance; convergence of water supply and sanitation activities including special projects; coordination with various State Government Departments and other partners in relevant activities; Monitoring and evaluation of physical and financial performance and management of water supply and sanitation projects; Integrating communication and capacity development programmes for both water supply and sanitation; and Maintaining the accounts of the programme funds and carrying out the required audit for the accounts.

Monitoring by State Water and Sanitation Mission – The State Water and Sanitation Mission (SWSM) society was mandated to meet at least twice in a year i.e. a minimum of ten meetings were to be held during the period 2016-21. The Society, however, conducted only

two meetings[1] (20 *per cent*) against the minimum required ten meetings during this period. Scrutiny of the minutes of the meetings showed that the SWSM, while reviewing the progress of schemes, issued directions in respect of JJM programme which included amongst others:

- Preparation of village action plans in consultation with VWSCs and Gram Panchayats based on baseline surveys, resource mapping and felt needs of the village community (ensuring availability of land for construction of in-village water supply infrastructure, willingness including affordability of people to contribute towards partial capital cost in cash/ kind and/ or labour and regular contribution towards O&M, etc.);
- Convergence with all stakeholder departments like Education, Integrated Child Development Services, Health and Rural Development & Panchayati Raj schemes/ programmes**;**
- Rural Development Department to reconstitute all VWSCs as per JJM guidelines as standing committee of the Gram Panchayat so that they have necessary powers under the Panchayati Raj Act;
- Implementation support agency (ISA) to be engaged by all DWSM by 31 December 2020 and their work plan finalised and monitored as per JJM guidelines;
- reduction in electricity charges in water supply schemes**;**
- Verification of Functional Household Tap Connections (FHTCs) actually provided to intended beneficiaries and uploading on IMIS portal**;** and
- Increase the number of Water quality laboratory tests.

Audit observed that the above directions were not implemented which indicated that SWSM had not fulfilled envisaged mandate.

(ii) State Level Scheme Sanctioning Committee

The NRDWP/ JJM guidelines provided for setting up of a State Level Scheme Sanctioning Committee (SLSSC) for approval of schemes vetted by State Technical Agency, for monitoring of physical and financial performance and management of water supply schemes, etc.

The State Government constituted (November 2010 and reconstituted in May 2020) SLSSC comprising Principal Secretary/ Secretary (IPH/ JSV) as Chairperson, E-in-C of the Department as Member Secretary and 12 Members. The Committee was mandated to meet at least twice in a year. It approved 1717 RWS schemes (estimated cost: ₹ 5618.28 crore) in the State as a whole in eight meetings[2] held during 2016-21 without ensuring their technical viability by the State Technical Agency (STA) as indicated in the succeeding sub-paragraph.

(iii) State Technical Agency

NRDWP guidelines provided for appointment of a State Technical Agency (STA) to assist in planning and designing sound and cost-effective major Rural Water Supply (RWS) schemes

[1] 28-04-2020 and 04-11-2020.
[2] 2016-17 (one), 2017-18 (one), 2018-19 (two), 2019-20 (two) and 2020-21 (two).

with emphasis on source sustainability and preparation of action plans. The STA in such cases was required to provide feedback to the SLSSC on various aspects of programme/ scheme and planning and implementation at the field level. The designated STA by SWSM at different times are given in **Table-2.1**.

Table-2.1
Details of designation of STAs for water supply schemes

Sl. No.	Name of STA (month of designation)	Period of STA	Meetings attended
1.	Punjab Engineering College, University of Chandigarh (March 2014)	June 2014 to May 2015	Nil
2.	No STA	June 2015 to September 2015	Nil
3.	Punjab Engineering College, University of Chandigarh (October 2015)	October 2015 to September 2016	Nil
4.	No STA	October 2016 to June 2018	Nil
5.	National Institute of Technology, Hamirpur (July 2018)	July 2018 to July 2019	Nil
6.	No STA	August 2019 to December 2019	Nil
Jal Jeevan Mission guidelines (December 2019) do not provide for designation of STA.			

Source: Information supplied by Department.

- As per MoU with STA, the DPRs valuing ₹ 5.00 crore and above were required to be vetted and scrutinized through STA. In seven (out of 20) test-checked divisions[3], nine schemes, each having an approved cost of more than ₹ 5.00 crore, were approved (between August 2016 and November 2018), of total cost of ₹ 152.18 crore. It was observed that none of these DPRs were sent to STA for vetting. Thus, the purpose of appointing the STAs was defeated.

- There was no STA designated for a period of 21 months during 2016-2018 and five months in 2019. Even where the STA was designated, their services were not availed of whereas this period saw the approval of as many as 1717 RWS schemes. This indicated that the SWSM/ SLSSC had not ensured the assistance/ feedback of the STA in planning/ designing and implementation of RWS schemes, thus defeating the purpose of their appointment.

  The Department informed that a representative of the National Jal Jeevan Mission under Ministry of Drinking Water and sanitation, Government of India also took part in the SLSSC meetings held for approval of water supply schemes. Besides, the STA also participated. However, the point stands that the SLSSC sanctioned schemes without ensuring their viability and vetting by the STA, to whom the DPRs were never sent for vetting.

(iv) District Water and Sanitation Mission

The NRDWP guidelines provided for constitution of District Water and Sanitation Mission (DWSM) at district level to analyse and consolidate village water security plans (VWSPs),

[3] Dharamshala: two schemes (₹ 19.58 crore), Jhandutta: one scheme (₹ 5.44 crore), Kullu-1: one scheme (₹ 16.71 crore), Hamirpur: one scheme (₹ 13.54 crore), Palampur: one scheme (₹ 25.09 crore), Salooni: one scheme (₹ 34.69 crore) and Thural: two schemes (₹ 37.13 crore).

prepare district water security plans (DWSPs), convergence with other related programmes and review the status of the progress of schemes through quarterly meetings. Further, Jal Jeevan Mission guidelines provided for preparation of Village Action Plan and finalisation of District Action Plan for providing functional household tap connection (FHTC), engage third party for inspection of works before payment and review the progress through monthly meetings.

The State Government constituted (November 2010 and May 2020) the DWSMs in all 12 districts of the State. The missions are headed by Chairman of Zila Parishad/ Deputy Commissioner of concerned district, Executive Engineer (EE) of IPH divisions at District Headquarters as Member Secretary and one member each of eight departments[4]. It was observed that:

- Information on meetings conducted by DWSM was not maintained at the E-in-C level.
- In all nine districts involving 40 selected schemes, the DWSMs had not performed the tasks envisaged in the guidelines. As against 243 meetings[5] required to be held between April 2016 and March 2021, only 31 meetings[6] (12.76 *per cent*) of the different DWSM had taken place. Thus, implementation of the programmes was not reviewed by DWSMs effectively. Inadequate monitoring of schemes in test-checked divisions by the DWSM either contributed to incomplete scheme for prolonged periods or completion of schemes with delay.

(v) Village Water and Sanitation Committees

NRDWP guidelines provide for a village water and sanitation committee (VWSC) to be set up as a Standing Committee in each Panchayat comprising six to 12 elected members of the panchayat and **women with due representation** to Scheduled Castes (SCs), Scheduled Tribes (STs), and poorer sections of the village in each Gram Panchayat for planning, monitoring, implementation and operation and maintenance of the rural water supply schemes to ensure active participation of the villagers. Further, JJM guidelines provide that VWSC may comprise 10-15 members giving 50% representation to women members.

Audit noticed that out of 3,615 Gram Panchayats (GPs) in the State, VWSCs were set up in 3,213 Gram Panchayats as of March 2021. In all nine selected DWSMs, due representation of women was noticed in constitution of 33 VWSCs. However, in the 20 test-checked divisions, none of the VWSCs had participated in the activities including planning, monitoring, implementation and operation and maintenance of rural water supply schemes during 2016-21.

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[4] Chief Executive Officer (CEO)- Zila Parishad/ District Development Officer, Divisional Forest Officer, Project Director in ITDA/ITDP, District Medical Officer, District Education Officer, Executive Engineers, District Agriculture Officer, and District Information and Public Relations Officer.

[5] April 2016 to March 2020: 144 meetings (quarterly meeting by each DWSM) and from May 2020 to March 2021: 99 meetings (monthly meeting by each DWSM)

[6] Bilaspur: 2, Chamba: 1; Hamirpur: 1; Kangra: 4; Keylong: 1; Kullu: 8; Mandi: 11; Rekong Peo: 1 and Shimla: 2.

The Department assured (December 2022), in the exit conference, for participation of communities at village level in future. The Department added VWSC would be in place after handing over the assets by the Department to PRIs/ communities.

Part-II Planning

Long-term comprehensive water security plans as per village water security plans to ensure bottom-up approach and community participation in planning and execution of water supply schemes were not formulated. No convergence with other programmes/ schemes was provided and no water supply scheme was transferred to communities and PRIs during 2016-21 for management and augmentation.

2.2 Comprehensive water security Plan

The NRDWP guidelines (2013) provided for preparation of five years comprehensive water security action plans by the Department to provide a definite direction to programmes/ schemes and also to ensure regular monitoring of the progress made towards the goal of achieving drinking water security to every rural household. Also Para 8.5 of Manual for Preparation of Detailed Project Report (DPR) for Rural Piped Water Supply Schemes provides for preparation of Village Water Security Plans[7] detailing availability of water recharging, conservation measures, drinking water security, etc. proposed to be achieved. A copy of such plan was also required to be attached with the DPR. JJM guidelines formulated in 2019 aims for provision of 100 *per cent* FHTC by 2024.

Audit observed the following:

- The Department had not formulated any five-year comprehensive water security plan during 2016-19 for achieving drinking water security as envisaged in NRDWP guidelines. In the absence of plans, monitoring of the progress made by the State in providing safe drinking water supply was not adequate.
- Village Water Security Plans were not found annexed with the DPRs of the 55 selected schemes analysed in Audit. It was observed that the VWSPs detailing therein drinking water security, conservation measures, availability of water recharging, etc. were not prepared by the village communities. The Department had not ensured community participation in preparation of the DPRs. During survey of 1,109 beneficiaries of 40 completed schemes, it was observed that 26 *per cent* of the beneficiaries were not satisfied with water security**.** Besides, 167 (out of 498) schemes in 18 test-checked divisions, on which an expenditure of ₹ 160.03 crore had been incurred, were lagging behind their scheduled period of completion by one and 47 months.

Thus, the Department failed to ensure preparation of the Water Security Plans with participation at the required levels which was indicative of schemes being formulated without any assessment of actual requirements and available resources.

[7] A plan prepared by village community which inter alia, will include the demographic, physical features, water sources, and other details of the village as per para 13 of NRDWP guidelines.

The E-in-C of the JSV stated (July 2022) that the Department had not prepared comprehensive water security plans. The reply did not explain reasons for the same.

2.3 Village action plans

As per Para 3.6 of JJM guidelines, a Village Action Plan (VAP) was required to be prepared by Gram Panchayat or its sub-committee i.e., VWSC/ *Paani Samiti*/ user group, etc. with support from Implementation Support Agency[8] (ISA Jal Shakti Vibhag and DWSM). The VAP based on baseline survey, resource mapping and felt needs of the village community (ensuring availability of land for construction of in-village water supply infrastructure, willingness including affordability of people to contribute towards partial capital cost in cash/ kind and/ or labour and regular contribution towards O&M, etc.) was required to be submitted to DWSM for further action.

Audit observed that during 2016-21, village action plans were not prepared by the Gram Panchayats or its sub-committees in all test-checked divisions. Therefore, as the pre-requisites could not be ensured, many schemes were held up.

2.4 Convergence with other programmes/schemes

The guidelines of NRDWP/ JJM provided for convergence with other programmes/ schemes like National Rural Health Mission (NRHM), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), etc. Source sustainability measures such as aquifer recharge, rainwater harvesting, increased storage capacity of water bodies, reservoirs, de-silting, borewell recharge structures, watershed management, water conservation, etc. were to be undertaken through convergence.

Audit noticed that in all test-checked divisions, no convergence with other programmes/ schemes implemented by the State Government had been provided to help the Department in utilizing the services of labour for execution of the schemes under MGNREGS.

2.5 Transfer of drinking water system to Panchayati Raj Institutions

NRDWP/ JJM guidelines provided for transfer of the rural drinking water supply system to communities and PRIs to enable the community to plan, implement and manage water supply schemes. In all test-checked divisions, no water supply scheme was transferred to communities and PRIs during 2016-21 for management and augmentation.

Conclusion

The institutional mechanism in the form of State Water and Sanitation Mission, State Level Scheme Sanctioning Committee, State Technical Agency, District Water and Sanitation Mission and Village Water and Sanitation Committees was non-functional and hence ineffective for policy guidance, technical support and monitoring. It then follows that the envisaged community participation in decision making at the planning, implementation and management stages was not achieved. This adversely affected schemes completion and uptake. The succeeding chapters discuss how a majority of the schemes were lying

[8] ISA assists in mobilizing and engaging the communities to plan, design, implement, manage, operate & maintain in-village water supply infrastructure.

incomplete for want of land and beneficiary contribution and poor penetration of completed schemes and lack of community ownership of completed schemes.

Recommendations

The Government may consider:

(i) Formation of Village Water and Sanitation Committees for planning and implementation of water supply schemes and ensuring planning and monitoring of the schemes by State Water and Sanitation Mission, State Level Scheme Sanctioning Committee and District Water and Sanitation Mission regularly. Ensure technical support of agencies in this process.

(ii) Formulation of long-term comprehensive water security plans based on village water security plans to ensure bottom-up approach and community participation in planning and execution of water supply schemes

Chapter-III
Financial Management

CHAPTER-III

Financial Management

3.1 Funding pattern and flow of funds

Funds for the drinking water supply schemes are mainly provided under the National Rural Drinking Water Programme (NRDWP)/ Jal Jeevan Mission (JJM) of Government of India (shared between GOI and State Government in the ratio of 90:10), State Government by National Bank for Agriculture and Rural Development (NABARD) Loan and other State schemes (Rural Water Supply Schemes and Urban Water Supply Schemes). Funds under NRDWP/JJM and other State schemes are routed through the State budgetary process. Besides, funds under National Disaster Response Fund (NDRF)/ State Disaster Response Fund (SDRF) are also provided directly to the divisions of the JSV by the Deputy Commissioners of concerned district for the restoration of schemes damaged by natural calamity, if any.

The financial management of drinking water schemes in the State was inefficient and uneconomical. Funds were diverted and excess expenditure was incurred reducing availability of funds for the sanctioned Schemes. Funds of ₹ 35.79 crore withdrawn from treasury and received from DCs and other divisions were lying unutilized in test-checked divisions for 10 to 79 months. As communities had not been encouraged to contribute to the Schemes, the envisaged community ownership had not happened.

3.2 Budget allocation and expenditure

Details of budget allocation and expenditure incurred there against for water supply schemes in the State during 2016-21 are given in **Table-3.1** and **Table-3.2**.

Table-3.1

Details of budget and expenditure for centrally sponsored water supply schemes during 2016-21

(₹ in crore)

Year	Name of programme	Budget			Expenditure		
		GOI	State	Total	GOI	State	Total
2016-17	NRDWP	85.80	44.72	130.52	64.34	42.91	107.25
2017-18	NRDWP	124.36	35.27	159.63	142.01	35.45	177.46
2018-19	NRDWP	81.25	26.06	107.31	89.64	26.52	116.16
2019-20	JJM	200.83	15.93	216.76	200.83	15.93	216.76
2020-21	JJM	319.98	41.95	361.93	307.24	40.48	347.72
Total		**812.22**	**163.93**	**976.15**	**804.06**	**161.29**	**965.35**

Source: Information supplied by Department.

Table-3.2

Details of budget and expenditure for State water supply schemes during 2016-21

(₹ in crore)

Year	Budget				Expenditure			
	RWSS		UWSS	Total	RWSS		Urban	Total
	State	NABARD			State	NABARD		
2016-17	54.29	114.02	21.00	189.31	53.86	114.03	21.00	188.90
2017-18	57.06	135.35	37.95	230.36	56.97	135.37	37.95	230.29
2018-19	62.14	121.56	71.82	255.52	62.17	121.55	71.82	255.54
2019-20	75.41	142.64	56.99	275.04	74.57	138.85	56.91	270.32
2020-21	182.48	167.11	45.00	394.59	232.01	156.98	44.31	433.30
Total	**431.38**	**680.68**	**232.76**	**1344.82**	**479.58**	**666.78**	**231.99**	**1378.35**

Source: Information supplied by Department.

Audit observed that the booked expenditure figures merely reflected the amount withdrawn from treasury and not actually used on the works of water supply schemes executed. Huge amounts remained unspent with some of the test-checked divisions as discussed in succeeding paragraphs.

3.3 Funds withdrawn for works not actually executed

In seven[1] (out of 20) test-checked divisions, out of total expenditure of ₹ 257.52 crore during 2016-21, the EEs had withdrawn ₹ 17.74 crore from the Consolidated Fund during 2016-20 and showed it as final expenditure on 39 water supply schemes[2] not actually executed and kept the amount under deposit head. Of this, an expenditure of ₹ 7.54 crore[3] was incurred in subsequent years for execution of the works and balance ₹ 10.20 crore[4] was lying unspent as of August 2021 to February 2022 under deposit head for more than 20 to 80 months.

This withdrawal of funds without its actual need was against Rule 183 of Himachal Pradesh Treasury Rules, 2017 which provide that no money should be withdrawn from the treasury unless it is required for immediate disbursement. It is not permissible to draw advances from the treasury for the execution of works, the completion of which is likely to take a considerable amount of time.

During the exit conference, the Secretary informed (December 2022) that under Jal Jeevan Mission, flow of funds is routed through Public Finance Management System (PFMS) and as such the practice of withdrawing funds in advance and keeping the same in deposit head has now been discontinued. However, the fact remains that the PFMS system is only applicable for JJM drinking water schemes and not for the State approved schemes. Thus, Audit apprehends that the checks available under Jal Jeevan Mission schemes will not be available for State schemes.

3.4 Unutilised funds

Funds under NDRF/SDRF received directly by the divisions from the DCs concerned and other divisions for the restoration of damaged schemes were required to be spent on restoration works. The details of funds received/ expended and period for which lying unspent are shown in **Table 3.3**.

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1 Chamba: ₹ 4.28 crore (March 2015 and March 2020), Dalhousie: ₹ 1.33 crore (March 2018 and March 2019), Dharamshala: ₹ 0.94 crore (March 2018), Hamirpur: ₹ 8.03 crore (March 2017, March 2018 and March 2020), Kaza: ₹ 0.45 crore (March 2019), Palampur: ₹ 0.80 crore (March 2018) and Thural: ₹ 1.91 crore (March 2018).

2 Completed schemes: 24 and incomplete schemes: 15 schemes

3 Chamba: ₹ 3.10 crore, Dalhousie: ₹ 0.70 crore, Dharamshala: ₹ 0.59 crore, Hamirpur: ₹ 2.20 crore, Palampur: ₹ 0.52 crore and Thural: ₹ 0.43 crore.

4 Chamba: ₹ 1.18 crore, Dalhousie: ₹ 0.63 crore, Dharamshala: ₹ 0.34 crore, Hamirpur: ₹ 5.83 crore Kaza: ₹ 0.45 crore, Palampur: ₹ 0.28 crore and Thural: ₹ 1.49 crore.

Table-3.3
Details of funds received/ expended and period for which remaining unspent

(₹ in crore)

Sr. No.	Agency from whom funds received	No of divisions	Month/ year of receipt	No. of schemes for which funds received	Funds received	Expenditure incurred	Balance	Period since lying unspent
1.	DCs	04	Between July 2015 and March 2021	60	3.33	0.04	3.29	10 to 79 months
2.	MCs		Between January 2015 and June 2020	03	54.36	38.57	15.79	13 to 78 months
3.	Other divisions		Between March 2018 and July 2019	04	0.72	0.11	0.61	28 to 95 months
4.	NRDWP	02	Between August 2013 and March 2019	Lump sum basis	5.12	2.35	2.77	31 to 55 months
5.	SDRF/ NDRF	04	Between September 2016 and March 2021	Lump sum basis	4.93	1.80	3.13	Seven to 58 months
	Total	**10**			**68.46**	**42.87**	**25.59**	

Source: Information supplied by Department.

- In four test-checked divisions[5], against ₹ 58.41 crore received from various agencies (Deputy Commissioners, Municipal Councils and other divisions) for execution of 67 water supply schemes, the Executive Engineers (EE) concerned incurred an expenditure of ₹ 38.72 crore from August 2021 to January 2022 and ₹ 19.69 crore was lying under deposit head for 10 to 79[6] months. In spite of availability of funds, the schemes/ works were not completed for prolonged periods, thus depriving the beneficiaries of the intended benefits. The EEs concerned stated (August 2021 to February 2022) that the works were in progress and the amount under deposit head would be utilized as and when the bills of the works are received.

- In two test-checked divisions (Keylong and Mandi), ₹ 5.12 crore (Keylong: ₹ 1.27 crore received during August 2013-March 2019 and Mandi: ₹ 3.85 crore received during March 2018) was received on lump sum basis for execution of schemes under NRDWP and was kept under deposit head. The EEs had incurred expenditure of ₹ 2.35 crore (Keylong: ₹ 0.03 crore and Mandi: ₹ 2.32 crore) as of July 2021 and October 2021. The divisions concerned had not surrendered the amount lying in deposit head despite the NRDWP scheme being discontinued in 2019.

- In four test-checked divisions, against NDRF/ SDRF funds, ₹ 4.93 crore[7] (from Shimla division No. 1: ₹ 2.62 crore and from DCs ₹ 2.31 crore) were received for restoration of water supply schemes damaged during rainy and winter seasons. The

[5] Jhandutta: ₹ 0.70 crore from JSV Division Ghumarwin, Kullu-I: ₹ 54.48 crore from Deputy Commissioner Kullu (₹ 0.12 crore) and Executive Officer MC Kullu (₹ 54.36 crore), Palampur: ₹1.56 crore and Thural: ₹ 1.67 crore from Deputy Commissioner Kangra (₹ 1.65 crore) and PWD Division Jaisinghpur (₹ 0.02 crore).

[6] Augmentation of WSS Manali Town (delay of 79 months) and Augmentation of WSS Kullu Town (maximum unutilized amount of ₹ 7.82 crore).

[7] Keylong: ₹ 1.91 crore, Kullu-I: ₹ 0.35 crore, Mandi: ₹ 2.62 crore and Palampur: ₹ 0.05 crore.

EEs concerned had incurred expenditure of ₹ 1.80 crore leaving ₹ 3.13 crore[8] under deposit head as of July to December 2021. However, water supply schemes were restored temporarily but lying incomplete as on date of audit. This indicated that the funds meant for restoration of damaged water supply schemes were kept unutilised for prolonged periods (seven to 58 months), defeating the purpose of providing immediate relief to the intended beneficiaries. The EEs of the concerned divisions stated (August 2021 to January 2022) that the amount could not be spent due to non-completion of codal formalities (preparation of estimates, tendering process, local disputes, delay by contractors, etc.).

3.5 Diversion of funds

Rule 14 of Himachal Pradesh Financial Rules, 2009 provides that the expenditure should be incurred for the purpose for which the funds have been provided. Funds under NABARD are to be sanctioned and utilised for rural water supply schemes. Further, as per Annexure-IV of Paragraph 7.10 of Operational Guidelines of JJM, the funds should not be diverted towards purchase of land, vehicles, construction/ renovation/ repair of office/ residential buildings, other State schemes, etc. The guidelines of NRDWP prohibit diversion of funds outside the scope of the programme.

Audit noticed that some of the test-checked divisions had diverted funds under NABARD, JJM and NRDWP outside the scope of the programmes as per details given in **Table-3.4**.

Table-3.4
Details of diversion of funds outside the scope of programmes

(₹ in crore)

Sr.No.	Agency from whom funds received	Purpose	No. of divisions	Funds diverted		Number of schemes to which diverted
				Month/year	Amount	
1.	NABARD	For drinking water supply schemes	01	March 2020	1.10	01 (urban)
2.	JJM		05	Between December 2019 and January 2021	4.87	93 (not approved under JJM)
3.	NRDWP		01	Between October 2019 and October 2020	1.01	13 (LIS/FIS, UWSS, Residential/ Official Buildings, Sewerage schemes, etc.)
Total			**07**		**6.98**	

Source: Information supplied by Department.

- In Kullu division No. I, EE had irregularly diverted NABARD funds of ₹ 1.10 crore towards 'Construction of Augmentation of WSS Manali Town, which were initially sanctioned (October 2014) for providing Lift Water Supply Scheme to group of villages (Phatti Peej, Kharahal Balh, Banhar, Khariar, etc.). The EE concerned stated (August 2021) that rectification will be made in future. Reply is not acceptable as NABARD funds should not have been diverted and used in urban water supply scheme.

[8] Keylong: ₹ 1.31crore; Kullu-I: ₹ 0.24 crore, Mandi: ₹ 1.53 crore and Palampur: ₹ 0.05 crore.

- In five divisions[9], the EEs had diverted JJM funds of ₹ 4.87 crore towards 93 other State schemes[10] in violation of the provisions of JJM guidelines *ibid*,
- In Rampur division, the EE had diverted NRDWP funds of ₹ 1.01 crore towards 13 other schemes (Lift/ Flow Irrigation Scheme, Urban Water Supply Scheme, Residential/ Official Buildings, Sewerage schemes, etc.) in contravention of the guidelines of the NRDWP.

3.6 Non-contributing of the share of capital cost by the communities

Para 6.1.2 of JJM guidelines provides that for in-village piped water supply infrastructure and related source development to be implemented by Gram Panchayat and/ or its sub-committee, i.e., VWSC/ *Paani Samiti*/ User Group, etc., communities will contribute 5 *per cent* of the capital cost in cash and/ or kind and/ or labour in hilly and forested areas, North Eastern and Himalayan States. The community contribution made in cash towards in – village infrastructure creation will be deposited in the respective bank account of gram panchayat and/ or its sub-committee, i.e. VWSC/ Pani Samiti/ user group, etc. that may be opened with any scheduled commercial bank. This account was to be operated jointly by chairperson of the gram panchayat and/ or its sub-committee i.e. VWSC/ Pani samiti/ user group, etc. and respective panchayat secretary. Separate ledgers had to be maintained for receiving community contribution (towards in-village infrastructure creation), incentive received and also for user fee provided by households towards meeting O&M requirements. The community contribution was to be paid to agency/ vendor as decided by DWSM.

Audit noticed that:

- The Department had not maintained records related to collection of community contribution and community ownership of water supply schemes at State level.
- No detailed project reports (DPR) of water supply scheme were approved under JJM in two (out of 20) test-checked divisions. In remaining 18 test-checked divisions, 410 water supply schemes were approved by the Department (between September 2019 and March 2021) with estimated cost of ₹1,151.56 crore under JJM to cover 11,074 habitations. However, communities did not contribute their share of ₹ 57.58 crore (at the rate of five *per cent* of estimated cost) as of June 2021-February 2022 as per details given in **Table 3.5**.

[9] Baggi: ₹ 1.58 crore, Bilaspur: ₹ 0.86 crore, Kullu-1: ₹ 0.47 crore, Matiana: ₹ 1.65 crore and Rampur: ₹ 0.31 crore

[10] Repair and maintenance of old schemes (65 works: ₹ 2.08 crore), SCSP (five schemes: ₹ 0.12 crore), NABARD (five schemes: ₹ 0.39 crore), FIS/ LIS (four schemes: ₹0.06 crore), UWSS (five schemes: ₹ 0.09 crore), Residential buildings (five works: ₹ 0.07 crore), SOP (three schemes: ₹ 0.47 crore) and repair of car (one case: ₹ 0.01 crore).

Table-3.5
Detail of capital cost contribution not shared by communities for the schemes sanctioned under JJM during September 2019 to March 2021
(Schemes and habitations in number and estimated cost and contribution ₹ in crore)

Sr. No.	Division	Schemes	Estimated Cost	Habitations	Contribution (Five *per cent*) to be obtained from communities
1.	Baggi	31	58.21	939	2.91
2.	Bhoranj	5	51.42	296	2.57
3.	Bilaspur	15	95.37	570	4.77
4.	Chamba	33	12.68	1546	0.63
5.	Chauntra	9	66.65	368	3.33
6.	Dharamshala	12	25.88	173	1.29
7.	Jhandutta	10	115.18	664	5.76
8.	Kaza	44	11.59	57	0.58
9.	Keylong	9	2.79	177	0.14
10.	Kullu 1	52	90.17	693	4.51
11.	Mandi	13	81.17	321	4.06
12.	Matiana	9	147.62	1470	7.38
13.	Palampur	25	132.36	370	6.62
14.	Rampur	83	45.54	541	2.28
15.	Reckong Peo	11	6.35	24	0.32
16.	Salooni	6	19.84	585	0.99
17.	Shimla	11	87.91	1732	4.40
18.	Thural	32	100.83	548	5.04
Total		**410**	**1151.56**	**11074**	**57.58**

Source: Information supplied by the Department.

There was no participation of the beneficiary communities in the important decision of location of the Schemes. The Department failed to promote and ensure voluntary ownership among local community by not getting the contribution of five *per cent* of the estimated cost. By not ensuring community contribution, the Department was unable to ensure community participation/ ownership in operation and maintenance of water supply schemes.

During the exit conference, the Secretary stated (December 2022) that after assessing the cost of in-village infrastructure, it was decided and notified that an amount of ₹ 100/- would be collected from every household as community contribution and the same is being recovered from the households. However, no such order for recovery as stated came to Audit's notice.

Non-revision of contract demand/ contract demand violation charges and payment of energy charges for nil consumption resulted in avoidable payment of energy charges of ₹ 1.79 crore.

3.7 Payments of energy charges

(i) Avoidable payment of demand charges and contract demand violation charges

As per General conditions of TARIFF of the Himachal Pradesh State Electricity Board Limited (HPSEBL), "Consumers under two part tariff, whose energy consumption is billed/ charged in Rs/kVAh (Kilo volt Ampere Hour), shall in addition to the kVAh charges, be also charged at the rates as per part-III, the 'Demand charges' (in Rs/VA/month), calculated on the actual maximum Demand (in kVA) recorded on the energy meter during any consecutive 30 minute block period of the month or at 90 *per cent* of the contract demand (in kVA),

whichever is higher but up to a ceiling of contract demand as currently applicable. HPSEBL charges contract demand violation charges (CDVC) in the event, the actual maximum demand recorded on the energy meter during any consecutive 30 minutes block period, exceeds the contract demand, at a rate which shall be three times the rate of the demand charges to the extent the violation has occurred in excess of the contract demand. Further, contract demand can be revised twice a year.

Audit noticed that:

- In seven test-checked divisions, recorded demand of electric meters of 10 lift water supply schemes during March 2018 to October 2021 (upto date of audit) was very low in comparison to contract demand, where the divisions had to pay demand charges to the HPSEBL at the rate of 90 *per cent* of contract demand. The EEs of divisions concerned had not taken up the matter with the HPSEBL to revise/ reduce the contract demand according to trends of actual consumption. Had the contract demand been reduced as per trends of actual consumption, payment of ₹ 0.94 crore during the period could have been avoided as given in **Table-3.6**.

Table-3.6

Details of avoidable payment of demand charges where recorded demand less than contract demand

Sr. No.	Name of division	No. of schemes	Contract demand (KVA)	Range of recorded demand (in KVA)	Period	Avoidable payment (in ₹ lakh)
1.	Bhoranj	1	66.41	23 to 36.5	May 2019 to September 2021	1.50
2.	Bilaspur	1	920	319.35 to 444.78	February 2020 to March 2021	13.61
3.	Dalhousie	1	889	171 to 332	March 2018 to July 2021	58.97
4.	Dharamshala	1	88	30.39 to 30.75	June 2019 to September 2020	2.34
5.	Hamirpur	4	1220	880 to 997.3	March 2020 to October 2021	4.43
			80	0.037 to 24.763	January 2019 to October 2021	3.78
			106	18.208 to 39.796	January 2019 to October 2021	4.82
			67	24 to 29	March 2020 to October 2021	1.80
6.	Mandi	1	292	0 to 143.089	February 2020 to September 2021	2.14
7.	Salooni	1	37	5 to 21.3	July 2018 to September 2021	0.35
Total		**10**				**93.74**

Source: Energy bills and information supplied by Department.

- In six divisions[11] (out of 20), recorded demand in respect of 10 lift water supply schemes was in excess of contract demand during the period between December 2017 and March 2021. The EEs of the divisions concerned had not taken action to revise the contract demand as per actual consumption which led to avoidable payment of contract demand violation charges of ₹ 0.64 crore to HPSEBL as given in **Table-3.7**.

[11] Baggi, Bhoranj, Bilaspur, Hamirpur, Mandi and Rampur.

Table-3.7
Details of avoidable payment of demand charges where recorded demand in excess than contract demand

Sr. No.	Name of division	No. of schemes	Contract demand (KVA)	Range of recorded demand (in KVA)	Period	Avoidable payment (in ₹ lakh)
1.	Baggi	1	30	71 to 88.1	November 2019 to November 2020	0.94
		1	60	122.6 to 157.3	November 2018 to February 2021	3.19
2.	Bhoranj	1	80	109.6 to 148	May 2019 to March 2021	5.88
		1	67	80.6 to 91.6	June 2019 to March 2021	1.37
3.	Bilaspur	1	108	113.6 to 126	February 2020 to February 2021	0.88
		1	29.84	42 to 47.2	April 2020 to February 2021	0.97
4.	Hamirpur	1	50	80.32 to 84.98	December 2019 to March 2021	0.69
		1	94	117 to 126	April 2020 to March 2021	1.12
5.	Mandi	1	75	118 to 157.6	May 2020 to March 2021	4.29
6.	Rampur	1	814	732 to 1096	December 2017 to March 2021	44.39
Total		**10**				**63.72**

The EEs concerned stated (between September 2021 and March 2022) that the matter for revision of contract demand would be taken up with HPSEBL. The fact, however, remains that the EEs had not taken up the matter with HPSEBL in time, leading to avoidable payment of demand charges.

(ii) Energy charges on 'Nil' consumption

In three divisions (out of 20), ₹ 21.29 lakh[12] was paid (between April 2016 and March 2021) to HPSEBL for the energy charges in respect of meters of seven lift water supply schemes where the consumption of electricity was 'Nil'. The EEs concerned had not reviewed the cases and taken up the matter with HPSEBL in time which resulted in loss to Government to that extent. The EEs of divisions concerned noted (October 2021-January 2022) the matter of disconnection of meters.

Test checked divisions had not realized water charges ₹ 9.35 crore and was outstanding for realisation as on 31 March 2021. Against expenditure of ₹ 243.77 crore on operation and maintenance of water supply schemes, collection of revenue of ₹ 99.81 crore during the period 2016-21 was only 41 *per cent* in the test-checked divisions and expenditure on operation and maintenance had increased considerably during 2019-20 (36 *per cent*) and 2020-21 (46 *per cent*). In Reckong Peo division, water charges of ₹ 27.42 lakh were embezzled and ₹ 12.02 lakh were not deposited in Government account.

[12] Bilaspur: ₹ 6.35 lakh, Chauntra: ₹ 9.53 lakh and Hamirpur: ₹ 5.41 lakh.

3.8 Water charges

Himachal Pradesh Water Supply Act 1968 provides that State Government shall levy a water charge for water supplied to consumer from a water supply scheme managed directly by the Government. The recovery of the water charges was required to be effected from the consumers on the basis of flat rate or on the basis of water consumption recorded in case of metered connections. The E-in-C notified the revised rates (January 2016) of ₹ 28.55 per connection per month for domestic users and ₹ 22.90 per kilo litre (KL) for commercial connections subject to minimum of ₹ 100/- per month. These rates were increased by 10 *per cent* on the 1st of April every year.

Audit noticed the following deficiencies:

(i) Non-realisation of water charges from consumers

Against water charges dues of ₹ 109.16 crore (opening Balance as on 1 April 2016: ₹ 3.90 crore and raised during 2016-21: ₹ 105.26 crore) from consumers in all 20 test-checked divisions during 2016-21, the EEs concerned had realised ₹ 99.81 crore and ₹ 9.35 crore was outstanding for realisation as on 31 March 2021 **(Table-3.8)**.

Table-3.8
Details of outstanding water charges in test-checked divisions as on 31 March 2021

Year	Water supply consumers (Nos.)	Consumers from whom outstanding water charges to be collected (Nos.)	Opening balance of outstanding water charges (₹ in crore)	Water charges bills raised (₹ in crore)	Water charges collected (₹ in crore)	Outstanding water charges (₹ in crore)
2016-17	3,14,349	27,770	3.90	16.96	16.42	4.43
2017-18	3,23,599	28,361	4.43	19.33	18.35	5.41
2018-19	3,40,236	33,238	5.41	21.18	20.42	6.17
2019-20	3,76,306	37,196	6.17	24.18	22.67	7.69
2020-21	3,99,973	50,341	7.69	23.61	21.95	**9.35**
Total				**105.26**	**99.81**	

Source: Information supplied by Department.

The Department informed (December 2022) during exit conference that collection of water charges had been discontinued since May 2022 in rural areas and assured to make efforts to recover the outstanding water charges.

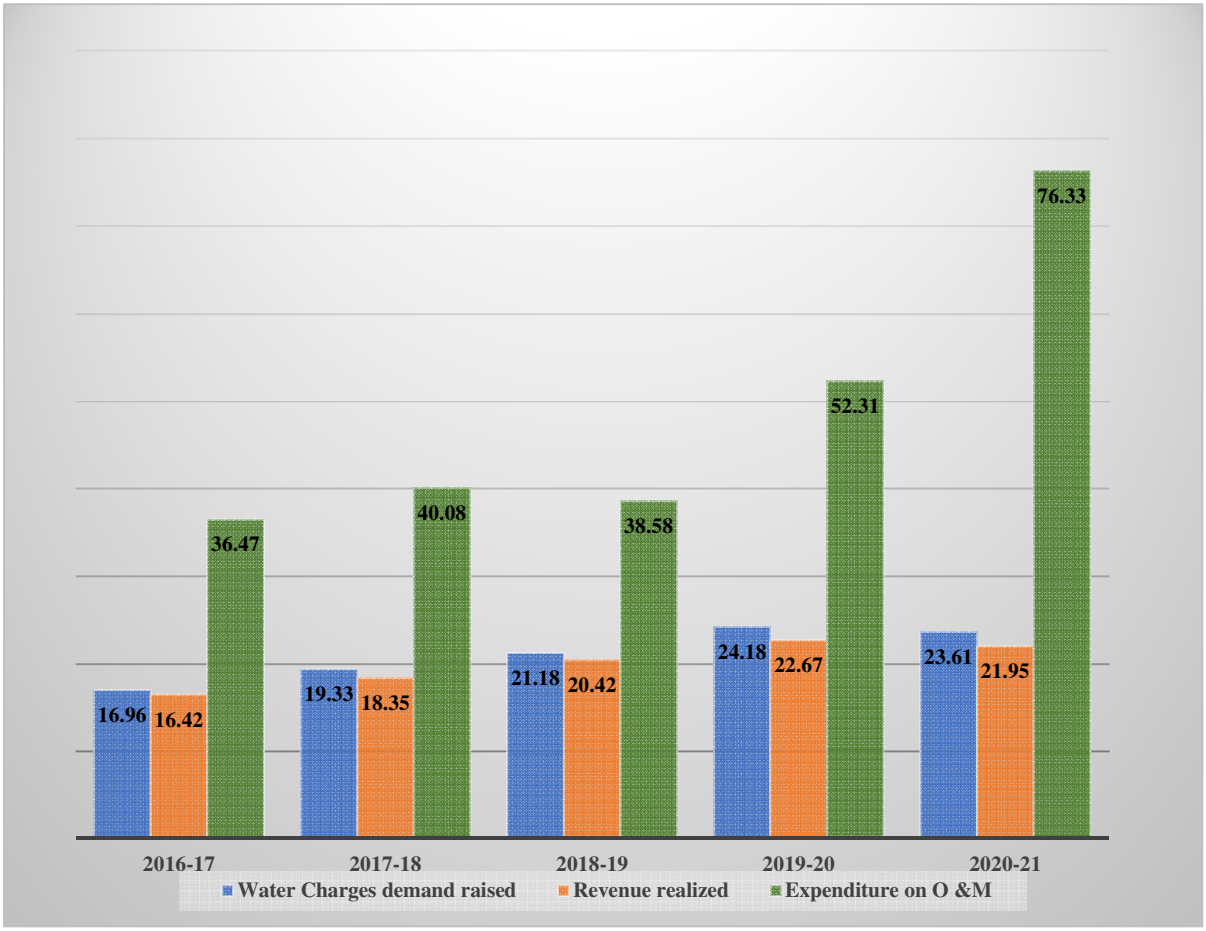
(ii) Comparative analysis of revenue raised, collected and expenditure incurred under operation and maintenance.

The comparative analysis of revenue raised, collected and expenditure incurred under operation and maintenance of water supply schemes in test-checked divisions is given in the **Chart-3.1**.

Chart-3.1

Comparative analysis of revenue raised, collected and expenditure incurred under operation and maintenance

(₹ in crore)



As can be seen from above, against the expenditure of ₹ 243.77 crore on the operation and maintenance of water supply schemes, collection of revenue of ₹ 99.81 crore during the period 2016-21 was only 41 *per cent* in the test-checked divisions. Thus, the collection of water charges was not commensurate with the expenditure on the operation and maintenance. Besides, expenditure on operation and maintenance had increased considerably during 2019-20 (36 *per cent*) and 2020-21 (46 *per cent*).

During the exit conference (December 2022), the Secretary took note of increase in expenditure on operation & maintenance and directed departmental officials to review the same.

(iii) Suspected embezzlement of water charges

Rule 3 of Himachal Pradesh Financial Rules 2009 provides that all moneys received by or on behalf of the Government as dues of the Government, shall be brought into Government Account immediately. Rule 5 further provides that it shall be the duty of the concerned Department of the State Government to ensure that the receipts and dues of the Government are correctly and promptly assessed, collected and duly credited to the Consolidated Fund.

- In Reckong Peo division, the EE had got printed (July 2015) 1000 receipt books for issue of receipts to the consumers on account of collection of water charges. Out of these, 893 receipt books were found blank/ unused in the store of the division and 89 receipt books were accounted for in the cash book and amount accordingly was deposited in treasury. One receipt book bearing receipt No. 23901-24000 was not produced to Audit by the division. In the remaining 17 receipt books, water charges of ₹ 27.25 lakh[13] received from the consumers during 2016-21 by the official of division were neither accounted for in the cash book nor deposited in treasury for credit of the Government resulting in suspected embezzlement. Out of above 17 receipt books, seven counterfoils[14] in four receipt books were found missing which may enhance the amount of suspected embezzlement.
- Water charges of ₹ 5.89 lakh received in February 2021 were taken as ₹ 5.78 lakh in the cash book and remitted into treasury. There is suspected embezzlement of ₹ 0.11 lakh.
- In Nichar sub-division, against ₹ 0.10 lakh received (between August 2018 and March 2020) from ten consumers, only ₹ 0.04 lakh was accounted for in the cash book and remitted into treasury. There is suspected embezzlement of ₹ 0.06 lakh.

Thus, non-deposit/ short deposit of water charges collections in treasury by the officials of the division resulted in suspected embezzlement of Government revenue of ₹ 27.42 lakh.

The Secretary taking note of the facts (December 2022) directed the Engineer-in-Chief to look into the matter and take strict action against the erring officials. It was also decided to review the position in all the divisions.

(iv) Non-crediting of water charges collections in Government account

In Reckong Peo division, water charges of ₹ 12.02 lakh collected during 2018-21 were deposited in current account in a commercial bank by opening account in the name of Assistant Engineer, Sub-division Reckong Peo instead of depositing the same in treasury under Receipt Head- 0215 Water Supply and Sanitation. The EE assured (August 2021) for

[13] Receipt book reference- (i) 2901-3000: ₹ 1.76 lakh (ii) 3901-4000: ₹ 1.80 lakh, (iii) 5101-5200: ₹ 1.80 lakh (iv) 5301-5400: ₹ 1.61 lakh (v) 5401-5500: ₹ 1.02 lakh (vi) 6201-6300: ₹ 1.82 lakh (vii) 6401-6500: ₹ 2.21 lakh (viii)7101-7200: ₹ 1.63 lakh (ix) 7201-7300: ₹ 1.75 lakh (x) 7301-7400: ₹ 1.92 lakh (xi) 7401-7500: ₹ 1.67 lakh (xii) 7501-7600: ₹ 1.38 lakh (xiii) 7601-7700: ₹ 1.48 lakh (xiv) 7701-7800: ₹ 1.57 lakh (xv) 20901-21000: ₹ 1.33 lakh (xvi) 21101-21200: ₹ 2.15 lakh (xvii) 89601- 89618: ₹ 0.35 lakh.

[14] (i) 2923 (ii) 2954 (iii) 2958 (iv) 2997 (v) 5369 (vi) 5482 (vii) 89613.

credit into Government account. The fact stays that the EE had kept the amount out of Government account for a prolonged period which was a violation of HPFR provisions.

(v) Non-recovery of water charges

In Palampur division, 1534 Kilo litres water was supplied by JSV to Municipal Council/ Municipal Corporation (MC) Palampur at the rate of ₹ 13.86 per kilo litre per day. However, an amount of ₹ 8.55 crore to be recovered during 2006-21 is still outstanding from MC Palampur as of January 2022. The EE, Palampur informed (January 2022) despite repeated communications, the MC did not remit the water charges.

Conclusion

The financial management of drinking water schemes in the State was inefficient and uneconomical. The revenues in the form of water charges were not being efficiently collected and at the same time huge funds were unnecessarily being paid as contract demand violation charges as the EEs had not watched the trends of actual consumption of electricity. Besides large amounts of funds released for the water supply schemes remained unspent with the divisions over prolonged periods of time. Also, funds were diverted and excess expenditure was incurred reducing availability of funds for the sanctioned schemes. As communities had not been encouraged to contribute to the schemes, the envisaged community ownership had not happened.

Recommendations

The Department may like to:

(i) Ensure utilization of allocated funds on schemes relating to drinking water services optimally in a time bound manner besides avoiding diversion of drinking water funds for other areas/ works.

(ii) Make use of Online Himachal Pradesh Water Bills App for raising, collection, realization/ deposit of water charges so as to avoid any misappropriation, delay in depositing of Government revenues in treasury, besides enhancing transparency and convenience to the consumers.

(iii) Organise information, communication and education activities amongst beneficiary communities to ensure their participation in the water supply schemes management.

Chapter-IV
Execution of schemes

CHAPTER-IV

Execution of schemes

Drinking water supply schemes are executed in the State through *Jal Shakti Vibhag* and Executive Engineers were responsible for ensuring the desired pace of work and completion of schemes within the stipulated time and cost. Deficiencies in execution of schemes such as delay in start/completion of schemes, schemes lying held up for want of encumbrance-free land and cost overruns etc. are discussed below.

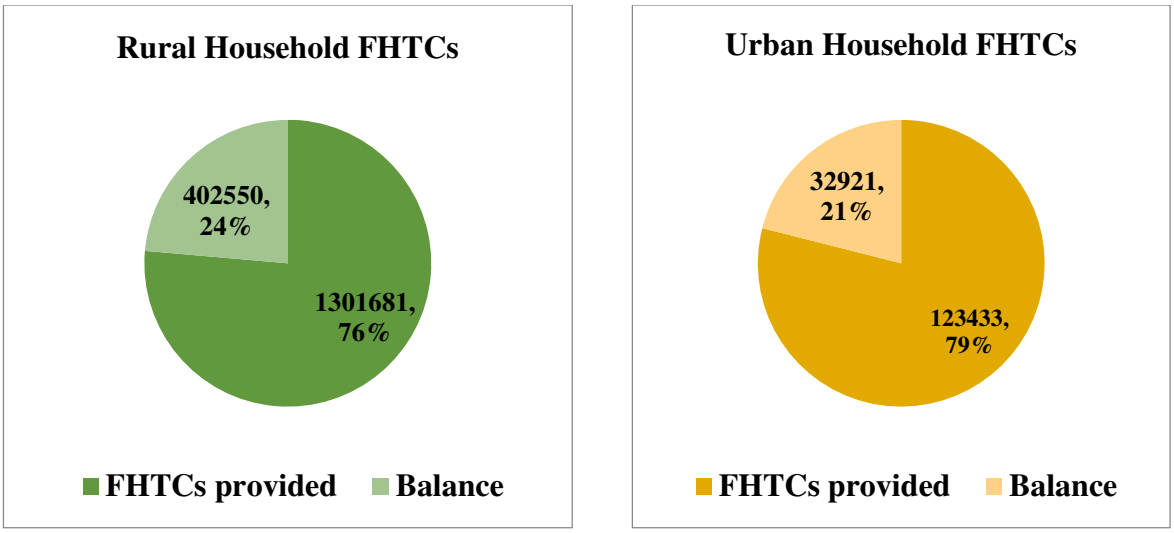
Out of total 18,60,585 households in the State, 14,25,114 households were provided with functional household tap connections (FHTCs) as of June 2021.

4.1 Execution of water supply schemes

The Government of Himachal Pradesh had fixed (July 2020) target to provide all rural households (17,04,231 nos.) with functional household tap connections (FHTC) by August 2022 under Jal Jeevan Mission. No targets were framed for connectivity for urban households (1,56,354 nos.).

As of June 2021, 13,01,681 (76 *per cent)* of 17,04,231 rural households and 1,23,433 (79 *per cent)* of 1,56,354 urban households, had been provided with FHTCs.

Chart-4.1
Status of FHTCs in the State



Source: Information supplied by the Department.

4.2 Supply in completed schemes

To gain assurance of the quantity and quality of water being supplied to the beneficiaries, Audit conducted a joint inspection with Departmental representatives (between July 2021 and March 2022) of 40 completed schemes (Lift water supply schemes: 23 and Gravity water supply schemes: 17). These schemes' areas covered an approximate population of 1.77 lakh

spread amongst 787 habitations **(Appendix-1)**. The audit observations are detailed later in this chapter.

4.3 Variation in data of coverage of households online and actual water consumers

Jal Jeevan Mission guidelines provide that the details of FHTCs should be uploaded on Integrated Management Information System (IMIS)[1] after receipt of commissioning certificates from Gram Panchayat/ its sub-committee, i.e., VWSC/ *Paani* Samiti/ User Group, etc.

Audit noticed:

- In 15 (out of 20) test-checked divisions[2], as per IMIS data 4,18,714 rural households were having FHTCs as of February 2022. However, there were only 2,69,581 FHTCs as per consumer ledgers[3]. The difference of 1,49,133 FHTCs indicates that data was inflated and actual coverage of households was much below that shown in IMIS.
- In Lahaul & Spiti district, as per IMIS data, 100 *per cent* i.e. 7,284 households were provided FHTC whereas as per consumer ledgers, only 1,335 FHTCs (18 *per cent*) had been provided.

Commissioning certificates of FHTCs were also not obtained by divisions from Gram Panchayat/ its sub-committee, i.e., VWSC/ *Paani* Samiti/ User Group, etc. before uploading FHTCs data on IMIS. Thus, reliability of data uploaded on IMIS was doubtful.

During the exit conference (December 2022), it was brought out that variations were due to non-updating of consumers ledgers, which are now being updated and commissioning certificates are also being obtained. The reply is not acceptable as details of FHTCs should have been uploaded on IMIS only after receipt of commissioning certificates from Gram Panchayats/ its sub-committees, i.e., VWSC/ *Paani* Samiti/ User Groups, etc.

Out of 1,125 approved schemes, 88 schemes were not started and 457 schemes could be completed and 580 were lying incomplete. Of 457 completed schemes, 282 schemes were completed after a delay of one to 113 months. Out of 580 incomplete schemes, 245 schemes were lagging behind their scheduled period of completion by one to 138 months.

4.4 Status of execution of schemes

The Executive Engineers were responsible for ensuring the desired pace of work and completion of schemes within the stipulated time and cost. Deficiencies in execution of schemes such as delay in start of schemes, schemes lying held up, cost overrun due to delay, faulty completion of schemes, etc. are discussed below.

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1 Online report of Jal Jeevan Mission Portal, Department of Drinking Water & Sanitation, Ministry of *Jal Shakti*, Government of India.

2 Baggi, Bilaspur, Chamba, Chountra, Dalhousie, Hamirpur, Jhandutta, Kaza, Keylong, Kullu-1, Mandi, Matiana, Rampur, Salooni and Thural.

3 New water connection sanctioned to consumer is entered in the ledger for record. The ledger shows the name of consumer, amount of bills raised, realized and balance also.

The work-wise consolidated records of the schemes taken up for execution, those completed and those remaining incomplete during 2016-21 had not been maintained/ updated at E-in-C level.

The details of execution of schemes in all test-checked divisions during 2016-21 are given in **Table-4.1** and **4.2**.

Table-4.1
Details of execution of schemes in all test-checked divisions during 2016-21

(₹ in crore)

Year	Schemes approved		Schemes not started		Schemes completed		Schemes incomplete/ ongoing as of Sep 2021	
	Nos.	Approved cost	Nos. (%)	Approved cost	Nos. (%)	Expenditure	Nos. (%)	Expenditure
Prior to 03/2016	331	756.24	2 (01)	3.30	247 (75)	387.32	82 (24)	208.80
2016-17	109	124.96	1 (01)	0.36	67 (61)	25.32	41 (38)	90.15
2017-18	76	55.69	4 (05)	0.12	32 (42)	6.15	40 (53)	27.19
2018-19	95	119.34	8 (08)	33.85	23 (24)	6.65	64 (68)	43.76
2019-20	249	760.03	9 (04)	12.05	64 (26)	19.91	176 (70)	242.46
2020-21	265	446.67	64 (24)	236.94	24 (09)	2.08	177 (67)	71.29
Total	**1125**	**2262.93**	**88 (08)**	**286.62**	**457 (41)**	**447.43**	**580 (51)**	**683.65**

Source: Information supplied by Department.

Table-4.2
Details of time and cost overruns noticed in all test-checked divisions during 2016-21

Schemes	No. of cases of time overrun	Time overrun in months	No. of cases of cost overrun	Cost overrun (₹ in crore)	No. of persons affected by delay
Schemes completed	282	one to 113 months	125	39.66	4,65,099
Schemes incomplete	245	one to 138 months	57	26.42	9,58,987
Schemes not started	27	one to 60 months	Liability yet to crystallise	Liability yet to crystallise	37,309
Total	**554**		**182**	**66.08**	**14,61,395**

4.4.1 Completed schemes

Of the 1,125 approved schemes from the beginning, only 457 schemes could be completed. Of these 457 schemes, 282 schemes were completed after a delay of one to 113 months owing to land disputes (57), non-availability of funds (37), delay in obtaining forest clearance (nine), delays attributable to contractors (64), snow bound area/ limited working season (10), delay in supply of power (five) and delay in change of scope of work (one). Reasons were not furnished by the Department in respect of balance 99 water supply schemes. Resultantly, 4,65,099 beneficiaries of these 282 schemes were deprived of adequate drinking water supply in time. Of these 282 schemes completed with delay, 86 schemes were completed with a cost overrun of ₹ 24.26 crore. Similarly, 39 schemes out of 175 schemes completed within stipulated time, there was a cost overrun of ₹ 15.40 crore.

4.4.2 Incomplete schemes and schemes not started

- Out of 1,125 approved water supply schemes as on 31 March 2021, overall 580 schemes were incomplete (including 335 ongoing works which were within the stipulated period of completion). It was in addition to 88 works which were never started. Out of 580 schemes, 82 schemes had been sanctioned prior to April 2016. Further, 78 (out of 82) schemes were lagging behind their scheduled period of completion (between January 2010 and January 2021) by 13 to 138 months. Resultantly, 4,49,016 beneficiaries of these 78 schemes were deprived of adequate drinking water supply in time. These schemes were lying incomplete due to land disputes (13), non - availability of necessary Forest Right Act clearances (1), work delayed by contractor (2), and insufficient funds (5). Reasons were not furnished by the Department in respect of the remaining 57 water supply schemes. Delay in completion of works had resulted in cost overrun of ₹ 6.98 crore in 23 schemes running with delays, for which Department was yet to obtain revised administrative approvals and financial sanctions.
- Of remaining 498 schemes approved between 2016-21, 167 schemes were lying incomplete beyond their stipulated completion period and time overruns ranging between one and 47 months from the stipulated date of completion (between February 2017 and September 2021) were noticed in these schemes. Out of these 498 schemes, 331 schemes were ongoing schemes still within their scheduled date of completion. Resultantly, 5,09,971 beneficiaries were deprived of adequate drinking water supply in time. These schemes were lying incomplete due to site/ land disputes (23), limited working season (10), non-availability of funds (12), delay by contractors (two), non-installation of supply of power equipment (one) and others (four). In 115 water supply schemes, no reasons were furnished by the EEs concerned. Delay in completion of works had resulted in cost overrun of ₹ 17.67 crore in 24 schemes for which Department was yet to obtain revised administrative approvals and financial sanctions. Similarly, for 10 schemes out of 498 schemes approved after March 2016 and still in progress, there was a cost overrun of ₹1.77 crore.
- It was noticed that execution of 88 (8 *per cent*) schemes had not even been started as of 31 March 2021. Of these 88 schemes, 27 schemes stipulated to be completed between June 2016 and August 2021, had overshot their stipulated completion dates by one to 60 months. Audit observed that local disputes (one), dry source (one), non-obtaining of technical sanction (one), works not started by the contractors (three), tender under process (five) were the reasons cited as contributing to the delays. The Department did not furnish the reasons for delays in respect of the remaining 16 schemes. Resultantly, 37,309 beneficiaries of these 27 schemes were deprived of adequate drinking water supply. As these schemes were neither implemented nor cancelled, the additional liability on account of cost overrun of these projects cannot be ruled out.

As can be seen from the **Table 4.2**, that the percentage of affected persons, due to delays in completion of various projects, was 21.29 *per cent* of the state population (as per last

available population census of 2011). The number of projects with delays in completion resulting in time overrun constituted 49.24 *per cent* of total approved projects. Similarly, the number of projects with cost overrun constituted 16.18 *per cent* of total approved projects with a cost overrun of ₹ 66.08 crore. This figure of cost overrun does not take into account, the additional liability, on account of cost overrun of 88 projects which were yet to be started.

4.5 Expenditure in excess of estimates

As per CPWD Manual, revised estimate must be submitted when the sanctioned estimate is likely to be exceeded by more than 10 *per cent*.

Audit noticed that in 18 test-checked divisions[4], expenditure of ₹ 59.66 crore was incurred in excess of sanctioned estimates for 95 schemes (68 completed water supply schemes and 27 water supply schemes in progress) but revised estimates of these works were not prepared as of July 2021-March 2022. The excess expenditure was between 11 and 97 *per cent* of the sanctioned estimates in 85 water supply schemes and 107 and 437 *per cent* in nine schemes; in one case it was 748[5] *per cent of* the sanctioned estimates. The excess expenditure needed to be regularised.

The EEs stated (July 2021 and March 2022) that revised estimates would be prepared and necessary sanction to regularise the excess expenditure would be obtained from the competent authority.

In nine completed water supply schemes, against norms of 70 litres per capita per day (lpcd) in rural areas and 120 lpcd in semi urban area, water supply ranging between 22 and 67 lpcd for rural area and in semi urban area 73 lpcd was being provided to beneficiaries. In 40 test-checked completed schemes, there were deficiencies in source, water treatment unit, pumping machinery, rising/ gravity main, storage tank/ distribution network and automation/ chlorination system which adversely affected the quantity and quality of water supplied to the user population.

4.6 Detailed scrutiny of selected water supply schemes

Audit conducted detailed scrutiny of 40 completed drinking water supply schemes (lift water supply schemes: 23 and gravity water supply schemes: 17) approved between September 2006 and September 2019 for ₹ 116.47 crore and completed between April 2016 and October 2021 after incurring an expenditure of ₹ 132.49 crore **(Appendix-1)**. Besides, detailed scrutiny of 15 incomplete water supply schemes (lift water supply schemes: 08 and gravity water supply schemes: 07) approved between September 2011 and November 2018 for ₹ 37.51 crore after incurring an expenditure of ₹ 22.04 crore was also conducted **(Appendix-2)**.

[4] Baggi: ₹ 2.55 crore, Bilaspur: ₹ 0.45 crore, Bhoranj: ₹ 0.55 crore, Chamba: ₹ 2.01 crore, Choutra: ₹ 0.35 crore, Dalhousie: ₹ 3.01 crore, Dharamshala: ₹ 10.15 crore, Hamirpur: ₹ 15.93 crore, Kaza: ₹ 3.47 crore, Keylong: ₹ 0.20 crore, Kullu-1: ₹ 1.30 crore, Mandi: ₹ 10.55 crore, Matiana: ₹ 0.89 crore, Rampur: ₹ 3.90 crore, Reckong Peo: ₹ 1.08 crore, Salooni: ₹ 0.42 crore, Shimla: ₹ 2.78 crore and Thural: ₹ 0.07 crore.

[5] Providing water supply scheme to PC habitation Kurched in Keylong district- Estimated cost: ₹ 1.32 lakh and Expenditure: ₹ 11.20 lakh.

Shortfall in supply of water

It was noticed in nine lift water supply schemes in five test-checked divisions, against design of supply of 70 lpcd in rural areas and 120 lpcd in semi urban areas (scheme proposed partially for urban and rural area), water supply ranging between 22 and 67 lpcd in rural areas and 73 lpcd in semi urban areas (LWSS Mehli Pujarli) was being provided to beneficiaries as detailed in **Appendix-3**.

During the exit conference (December 2022), the Secretary accepted the position and assured for appropriate action to augment the supply of drinking water to the habitations.

Component-wise deficiencies of completed water supply schemes have been discussed below.

4.6.1 Deficiencies in the source of water supply schemes

Source of water refers to bodies of water that provide drinking water to public. Water sources include surface water (rivers, *khads, nallah,* canal, etc.) and ground water (percolation well, borewell etc.). Out of 40 schemes, 31 schemes were having surface water sources and nine were having ground water sources. Deficiencies related to source of the schemes observed in Audit are given in **Table 4.3** below.

Table-4.3
Source deficiencies in water supply schemes

Sr. No.	Scheme	Source deficiencies
1.	LWSS Jakhyal Phase II (Hamirpur district)	• Original site of percolation well was changed wide off Seer *Khad* upward and constructed in the middle of Seer *Khad.* • Spurs[6] were not found constructed to divert the flow. The percolation well was not protected and could wash away during floods.  **Percolation well in flood prone area of *Seer khad***
2.	Improvement of LWSS Kareri, Takroon, Gwal Pather and Hathol (Hamirpur district)	• Percolation well was constructed on the banks of *Maan Khad* but with flow of water in the *Khad*, the wall constructed for its safety was partially damaged during rainy season. The possibility of damages of percolation well in near future could not be ruled out. • Action for protection of the percolation well was not initiated.  **Damaged protection wall of percolation well on the bank of Maan *khad.***
3.	Improvement of LWSS Lagwalti Jangle and LWSS Bhatlamber in Hamirpur district	• The scheme was shown completed at a cost of ₹56.55 lakh during October 2020 but percolation well and pump house were yet to be constructed. • The percolation well of another Lift Irrigation Scheme (LIS) Jakhu was used for making the Scheme functional by installation of 10 horsepower (HP) submersible pumping set whereas the LIS was made non-functional. • In a survey conducted by Audit, seven (out of 30) beneficiaries were not satisfied with the quality of drinking water supplied through this scheme.

[6] The spurs (or groynes) are structures placed transverse to the water flow and extend from the bank into the river/ *khad*.

4.	LWSS Mehli Pujarli (Shimla district)	• One borewell with capacity of 5 LPS and its rising main from Borewell to WTP, electric panel board, electric pole, etc. were totally damaged and washed away in floods that occurred during August 2019. The borewell was constructed in the middle of source (Ashwani *Khad*).  **Damaged borewell constructed in the middle of the source at Ashwani *Khad*** • Against total water requirement of 6,64,080 litres per day (LPD), only 4,03,200 LPD (at the rate of 16 hours X 7 LPS pumping from Borewell) was lifted from 2nd borewell having capacity of 7 LPS, resulting in short supply of 2,60,880 LPD. Water was being distributed to habitations on alternate days only. • A period of two years (as of July 2021) had elapsed from the date of damage of the Borewell, but the same was not repaired. Against 120 LPCD, only 73 LPCD water was being provided to the beneficiaries of this scheme.
5.	PWSS to partially covered (PC) habitation Banuri, Banuri Khas (Kangra district)	• No intake chamber was constructed. • Water was directly tapped from the Awa *Khad* and the pipes laid open into the *Khad,* which were likely to be washed away with higher flow of water in rainy seasons.  **Water tapped directly (without intake chamber) from Awa *khad***
6.	LWSS Suka Kun (Mandi district)	• One Winch Room and Rail Trolley System was constructed for the scheme for lifting raw water from Beas River through submersible pump and the system had tilted/ derailed due to floods in August 2021. • The Rail Trolley had not been adjusted in its place by the Department as of November 2021.  **Tilted Rail Trolley system for lifting water from Beas river** • Against requirement of 577360 litres (70 LPCD) water, only 463680 litres (56 LPCD) water was being lifted from *Khaliana Khad*. • All surveyed beneficiaries (10) of *Bathar*, *Chalahar* and *Khajroun* village stated in beneficiary survey that water was supplied only once in 3 days.

4.6.2 Deficiencies in water treatment unit.

Water treatment is a process that improves the quality of water to make it fit for a specific end-use. Water treatment process consists of several steps including collection; sedimentation; clarification; filtration and disinfection. Deficiencies related to water treatment units of water supply schemes noticed in Audit are given in **Table 4.4**.

Table-4.4
Water treatment unit deficiencies in water supply schemes

Sr. No.	Scheme	Deficiencies	
1.	Water supply scheme (WSS) Dobhi Shim (Kullu district)	• The scheme was shown completed (December 2020) but sedimentation tank and filter beds were observed as not connected to the source (August 2021). Resultantly, unfiltered water was being supplied to households. • In the survey conducted by Audit, six beneficiaries (out of 30) of the scheme stated that water was not of good quality and turned turbid during rainy season.	 **Incomplete sedimentation tank and filter bed**
2.	WSS Dawara (Kullu district)	• Sedimentation tank and filter beds damaged during 2018 were not repaired as of August 2021. Therefore, unfiltered water was being supplied to households directly from the source. • Ten out of 33 beneficiaries of the scheme expressed that water quality was not good during rainy season and turned turbid.	 **Damaged sedimentation tank and filter beds**
3.	LWSS to Village Shirgulli Kadrain and Balghar Ghassigoan Madhog (Shimla district)	• There was leakage on the walls of sedimentation tank and the water was muddy. Sedimentation tank and filter beds were unclean. • Logs of cleaning of the sedimentation tank and filter beds were not available. • Four (out of 31) beneficiaries were not satisfied with the quality of drinking water.	 **Leakage in sedimentation tank**
4.	WSS Dul Panjajan and Dagon group of Villages (Mandi district)	• Sedimentation tank and filter beds constructed during 2012-13 were lying unused (December 2021) of Phase I of the scheme. In phase II, filter beds were constructed and Scheme was reported as completed (March 2018) but the same was not used. • As per Measurement Book (No.1769), the measurement of the filter beds was done during April 2018 showing all the layers (Top layer: fine sand; 2nd layer: coarse sand 3mm to 6 mm; 3rd layer: Bajri 20 mm to 25 mm, and Bottom layer: broken stone 50 mm to 75 mm) having been laid. However, only the broken stones of almost 75 mm were found at the bottom layer and no other layers were seen as certified. This indicated the dubious measurement of the filter beds. Thus, filter beds were not constructed as per specification and the water tapped from source (*nallah)* was directly taken into the storage tank. • 17 beneficiaries (out of 30) expressed dissatisfaction with the quality of drinking water.	

<table>
<tr><td>5.</td><td>Three water supply schemes Bhoranj: WSS Kathialwin, Matiana: LWSS Swari Khad and Shimla: LWSS Mehli Pujarli</td><td>• Joint inspections (between July 2021 and March 2022) of schemes showed that in three schemes (out of 40), sedimentation tanks and filter beds were not cleaned since December 2018 and February 2021. Resultantly, layers of algae had formed in sedimentation tank and filter beds.
• 15 (out of 63) beneficiaries of two (out of three) schemes stated that dirty and smelly water was being supplied.</td><td> 
Unclean sedimentation tank of WSS Kathialwin
 
Unclean filter bed of LWSS Swari Khad
 
Unclean filter bed of LWSS Mehli Pujarli</td></tr>
<tr><td>6.</td><td>Improvement of WSS Bachuni Pukhri Phase-II and WSS Danoon (Chamba district)</td><td>• Water tapped from Ghal Nallah (source) was being provided to the beneficiaries without filtration. Chamber of filter media was damaged and dirty. Foreign material, bushes and stones were visible in the chamber. Unfiltered water was being supplied to the beneficiaries.
• 16 beneficiaries (out of 30) expressed (October 2021) dissatisfaction with the quality of drinking water.</td><td> 
Unclean chamber of filter bed</td></tr>
<tr><td>7.</td><td>Augmentation of WSS to Village Jassure, Dukhar, Bharari and Tikkri (Chamba district)</td><td colspan="2">• After tapping water from proposed Mahadev Nallah, water was required to be taken into the existing sedimentation tank for supply after filtration. During joint inspection it was noticed that the line was laid directly from Mahadev Nallah to storage tank at Kut instead of first to old sedimentation tank and filter media as planned. Resultantly, unfiltered water was being supplied to the beneficiaries.
• 16, out of 30 beneficiaries were not satisfied with the quality of drinking water.</td></tr>
</table>

4.6.3 Deficiencies in pump house & pumping machinery

Pump house is place where pumping machinery is installed to lift water from one place to another through rising main.

Audit noticed:

- The augmentation of LWSS Tandi in Lahaul & Spiti district completed in October 2020 at a cost of ₹ 34.85 lakh was not made functional due to non-installation of separate electricity meter for running pumping machinery. Non-commissioning of the Scheme resulted in expenditure of ₹34.85 lakh remaining unfruitful.
- In LWSS Mehli Pujarli (Shimla district), auto transformer starter for second pump was not installed right from the time of commissioning in December 2018 rendering the pump non-functional.
- As per Central Public Health and Environmental Engineering Organization (CPHEEO) Manual and instructions of the Department (May 2003), provision for stand by pumps should be made in all water supply schemes. However, in four test-checked divisions, seven pump sets of six water supply schemes[7] were found to be out of order since December 2018 and August 2021. The Department had not initiated action to repair these standby pumps as of date of audit. It is felt that if second pump of these water supply schemes goes out of order, water supply to the households would be affected.
- Two test checked schemes i.e. LWSS from Kashapat *khad* to Dansa and LWSS Kharahan *khad* to Jahu Kofradhar under Rampur division were completed in August 2017 and May 2017 respectively. However, the pumping machinery installed for lifting of water was not operated for optimum capacity. Against the scheduled running of 16 hours per day, the pumping machinery of LWSS Kashapat *khad* was operated for 12.1 hours per day. Similarly, against 8 hours, the pumping machinery of LWSS Kharahan *khad* was operated for 4.33 hours per day. As a result, inadequate water was being lifted and supplied to the beneficiaries **(Appendix-3)**.

4.6.4 Deficiencies in rising/ gravity main

Rising main is the delivery line carrying water from pump to storage tank. Gravity main is to transport water from the source to the user through a piped network without pumping.

- In providing WSS to partially covered (PC) habitation Sosaring (Kinnaur district), all the components of scheme i.e. intake chamber: one, storage tank of 10000 litres capacity: one, distribution network, etc. were constructed but the gravity main 350 Rmt. (dia 25 mm from intake to storage tank) was not laid. Beside the constructed tank, water of nallah was flowing which was utilized by the villagers for irrigation purpose. Instead of connecting the constructed tank with the proposed source by laying the 350 Rmt. gravity main, the water flowing beside the tank was tapped into the constructed tank and water supply scheme was made functional. When the water was required for irrigation, the water of nallah was diverted for irrigation purpose and otherwise water was diverted to tank for drinking purposes.
- In improvement & augmentation of source level LWSS Jharet Rajhoon & LWSS Kiarwan (Kangra district), the gravity main of the scheme laid during 2011-12 was seen lying without anchor block during joint inspection. The Scheme was shown as

[7] Bhoranj: one; Mandi: two; Matiana: three and Shimla: one.

completed in March 2020. However, construction of thrust block/ anchor block for the gravity main awarded to a contractor at a cost of ₹ 8.47 lakh during 2011-12 was not constructed and the Division had not initiated any action against the contractor. The gravity main without anchor block could be damaged in case of flood. Thus, the Department had not ensured the safety of the gravity main.

4.6.5 Deficiencies in storage tank and distribution network

(i) Non-construction of storage tank and non-laying of distribution network

In Replacement of distribution system for water supply scheme Jia Gopalpur Phase-1st (Kangra district), against construction of seven underground reservoirs awarded to a contractor (July 2013), six underground reservoirs having capacity between 10000 and 115000 litres were constructed and one underground reservoir of 10000 litres was not constructed. The work of laying and jointing of galvanized iron (GI) pipes of 25 mm dia (480 Rmt.) and 32 mm dia GI pipes (1435 Rmt.) had not been started as of January 2022. The Department had, however, reported (February 2020) the Scheme as completed. Eight (out of 32) beneficiaries expressed (January 2022) that inadequate quantity of water was being provided.

(ii) Leakage in storage tank

In LWSS Dhararsani and its adjoining villages (Bilaspur district), there were leakages in distribution network since July 2021, but had not been attended as of December 2021. This resulted in wastage of water. However, the exact quantity of water wastage could not be calculated in the absence of details of discharge rate of leakage.

(iii) Distribution network-wrong reporting of facts

- In LWSS Mehli Pujarli (Shimla district), against distribution line of 30,650 Rmt, only 24891 Rmt. line had been laid as of July 2021. The Scheme though incomplete had been shown as completed. Six (out of 30) beneficiaries stated (July 2021) that distribution line had not been laid and inadequate water was being supplied.
- In Reckong Peo division, the scheme 'Providing WSS from Chhamble to Pangi' (Kinnaur district), was shown as completed in April 2016. The approved scope of the scheme included construction of intake chamber, two storage tanks (5000 litres and 10000 litres), chlorination chamber and distribution network. Construction of one intake chamber, RCC underground storage tank (5000 litres), chlorination chamber, barbed wire fencing, development of site and laying and jointing of galvanised mild steel (GMS) tube of various dia, awarded in September 2008 for ₹ 9.81 lakh was completed in February 2010. The remaining work i.e. construction of RCC underground tank (10000 litres), stand posts, development of site for storage tank and laying and jointing of GMS tube of various dia and providing and fixing galvanised mild peet valve was awarded in September 2008 for ₹ 6.46 lakh stipulated to be completed within six months. However, scrutiny of records and joint inspection showed that only one tank of 10,000 litres was constructed by the contractor and remaining components were not constructed. The contractor was issued (March 2009)

material[8] of ₹ 2.85 lakh but the contractor did not execute any work thereof. Further, it was observed that all executed components i.e., intake chamber, storage tanks, chlorination chamber and laid mild steel (GMS) tubes were not found usable. Total expenditure of ₹ 26.18 lakh had been incurred and the scheme was shown as completed in April 2016, but actually the scheme was incomplete even on the date of audit. Thus, the executed work of the scheme was not put to use resulting in expenditure of ₹ 26.18 lakh remaining unfruitful. Besides, material worth ₹ 2.85 lakh was lying with the contractor since 2009. The purpose of the scheme of providing clean drinking water thus could not be achieved.

- The scheme 'WSS Dul Panjajan and Dagon group of Villages in Mandi district' scheduled to be completed by January 2015 was not actually completed as three sub works of laying jointing of GI pipes (part of distribution network) awarded to three contractors for ₹ 2.57 lakh had not started. The Division had neither rescinded the contracts nor taken action for execution of the works as of January 2022. The incomplete scheme was shown as completed in March 2018.

4.6.6 Deficiencies in miscellaneous components- Automation and Chlorination

- In LWSS from Kashapat *Khad* to Dansa (Shimla district):

  (i) The work was awarded (January 2016) for ₹ 5.37 crore and stipulated to be completed within 12 months. The Scheme was commissioned in August 2017. However, the automation system including pumping machinery upto delivery tank at Node 10 (Sartu) was not functional ever since the commissioning of the scheme. The cost of automation system was ₹ 45.65 lakh. As per agreement, there was provision of automation of the scheme with normal sluice valve[9] which was not applicable at site. There was no provision for self-actuated sluice valve and SCADA system[10] for full automation of the scheme actually required at site. The provision of self-actuated sluice valve and SCADA system for complete automation of the scheme was made as extra items for ₹ 43.59 lakh in September 2019. These extra items were arranged by the contractor for which payment of ₹ 35.17 lakh was made to contractor in June 2020. Inspite of this, the automation system was not made functional for the last 54 months and the scheme was being operated manually. Reasons for the same were not on record and operation and maintenance contract *ibi*d of the scheme for two years had also expired. Thus, the Department had initially failed to assess the actual requirement of automation system at site and the expenditure of ₹ 80.82 lakh (normal automation system: ₹ 45.65 lakh and self-actuated automation system: ₹ 35.17 lakh) incurred on this component was rendered wasteful.

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[8] Galvanised iron pipes: 15 mm dia (500 rmt.); 20 mm dia (1654 rmt.); 25 mm dia (175 rmt.); 40 mm dia (30 rmt.) and cement (50 bags).

[9] Regulator consisting of a valve or gate that controls the rate of water flow through a sluice head gate.

[10] SCADA: Supervisory Control and Data Acquisition (SCADA) system provides control functionality and alarms at rural/ urban water supply scheme sites which, in many cases are very remote and to satisfy a variety of increasing pressures such as consumer demands, regulatory requirements, and to also satisfy the need to reduce operational costs. It is a type of software application program for process control.

(ii) Bleaching powder type chlorinator at WTP of the scheme was also not made functional as of February 2022. Bleaching powder was stated to be added on daily basis in the sectoral storage tanks but no records were maintained by the Department. It was also noticed that against required 0.2 mg/litre of chlorine, as per JJM guidelines, 0.1 mg/litre residual chlorine was found in water test of chlorinated water, got conducted by Audit. This was indicative of the fact that proper chlorination was not being done by the Department.

(iii) The work of WTP was awarded in December 2014 for ₹ 6.99 crore to be completed within 12 months. The Scheme was completed and commissioned only in August 2017. The provisions of laboratory and equipment were made at WTP and were provided by the contractor. As per condition of the award letter, this laboratory was to be run by the contractor for six months upto January 2018. After that the laboratory was to be handed over to the Department for operation. However, it was seen during joint inspection that the laboratory was not being run by the Department and equipment was lying idle since January 2018. Thus, in the absence of on-site testing, supply of quality water could not be ensured.

- In WSS Uteep, Bat, Luddu, etc. (Chamba district):

(i) Gaseous chlorination system was installed in WTP of scheme. However, it was noticed that out of four installed cylinders having capacity of 100 kg each (duration of one cylinder is four to five months), not a single cylinder had run out yet whereas 56 months had lapsed from the date of commissioning of scheme (April 2017), indicating improper operation. The residual chlorine that should be 0.2 mg/l, was below detection limit in water sample collected from the outlet of the schemes on 09.12.2021 as confirmed in water test conducted in District Laboratory, Chamba. It was observed that staff had no proper knowledge regarding operation of this gaseous system. No logbook of the gaseous chlorination system was found maintained by the Department during joint inspection.

(ii) Laboratory installed (April 2017) at WTP as per provisions of DPR, was in dilapidated condition since 2019. Joint inspection showed building of the laboratory had been damaged in rainy season and the work of operation and maintenance of the Scheme, done by the contractor since April 2017 whose contract was going to expire in April 2022.

- In Lift water supply scheme Mehli Pujarli (Shimla district), Gaseous chlorination plant installed at the top of sump well-cum-main storage tank of scheme, was out of order since June 2019 due to which automated chlorination was not being done.

Gaseous chlorination plant

- In three[11] (out of 40) test-checked water supply schemes (completed during July 2016 to November 2018) in three test-checked divisions, against the requirement of 1900, 1400 and 1700 gms of bleaching powder daily, only 1200, 1000 and 1000 gms of bleaching powder were added in the main storage tanks respectively, manually. Thus, lesser quantity of 700, 400 and 700 gms of bleaching powder was added in the storage tanks. To test the quality of water, one water sample was drawn from the scheme LWSS Juni *Khad* by Audit and got tested. The sample showed no residual chlorine due to which bacterial contamination (Total Coliform 23/100 MPN) was also found in water sample.

  Further, provision of chemical solution dosing pump with complete accessories (automation system) was kept in the DPRs of two (out of three above) test-checked water supply schemes[12] but the same was not constructed/ installed at the time of completion of schemes. Due to non-construction of chemical solution dosing pump at WTP, bleaching powder for chlorination was added manually in main storage tanks as mentioned above.

- In two water supply schemes[13], provision of laboratory was kept in the DPRs of the schemes. These schemes were completed during 2016-17, but the provision of laboratory was not ensured at the time of execution of these schemes. Thus, no testing of water is done at the site of WTP.

During the exit conference (December 2022) discussions, the Secretary assured to issue directions to respective divisions to take corrective measures.

4.6.7 Impact of audit findings of completed water supply schemes

Audit noticed that there were deficiencies in completed water supply schemes, indicated in the foregoing paragraphs, which had adverse impact on supply of drinking water to the beneficiaries:

- The State had aimed to provide 135 litres per capita per day (lpcd) to all urban and 70 lpcd to rural population by the year 2030. However, only 10.39 *per cent* of urban population and 61.43 *per cent* of rural population was being supplied water of at least 135 lpcd and 70 lpcd respectively.
- Due to deficiencies in source and pumping machinery, against design of supply of 70 lpcd in rural areas and 120 lpcd in semi urban areas, water supply ranging between 22 and 67 lpcd for rural areas and 73 lpcd in semi urban areas (LWSS Mehli Pujarli), was being provided to beneficiaries in nine lift water supply schemes of the selected sample indicated in **Paragraph 4.2**.
- Due to deficiencies in water treatment unit, unsafe water was being supplied to the beneficiaries of nine water supply schemes**.** In these schemes, the water supplied was

[11] Jhandutta: LWSS Barad Manan (November 2018); Mandi: LWSS Juni *Khad* to Upper Pandoh (July 2016); and Mandi: LWSS Suka Kun (2017).
[12] Jhandutta: LWSS Barad Manan and Mandi: LWSS Suka Kun.
[13] Mandi: LWSS Juni *Khad* and LWSS Suka Kun.

turbid, smelly and unfiltered. Deficiencies in chlorination level resulted in supply of unsafe drinking water to the beneficiaries in six water supply schemes and the residual chlorine that should be 0.2 mg/l, was below detection limit in water sample collected from the outlet of three water supply schemes**.** Audit got a sample tested and total Coliform of 23/100 MPN count was found in the water sample. In effect, the water supplied posed a health hazard to the beneficiaries.

- Due to deficiencies in storage and distribution network, supply of inadequate drinking water was being provided in two water supply schemes as confirmed in the beneficiaries' survey.

4.7 Beneficiary Survey of test-checked completed schemes

Beneficiaries' survey in respect of 40 completed schemes was conducted (July 2021-March 2022) by Audit Team. The survey covered 1109 beneficiaries from head to tail end of each scheme (Head beneficiaries: 279, Middle beneficiaries: 256 and Tail end beneficiaries: 574). The details of beneficiaries surveyed and their satisfaction level are given in **Table-4.5** below:

Table-4.5
Details of beneficiary survey and satisfaction level in respect of 40 test-checked completed schemes

Parameter	Beneficiaries surveyed	Satisfaction level response	
		Number of beneficiaries	Percentage
Awareness of safe/ potable drinking water	1,109	987	89
Supply of sufficient water for drinking, cooking and other domestic needs	1,109	885	80
Availability of supply of drinking water all around the year	1,109	824	74
Supply of drinking water supply at regular intervals	1,109	903	81
Water complaints filed with the department relating to non-supplying of drinking water	1,109	440	40
Access to drinking water from multiple/ alternative sources	1,109	558	50
Supply of adequate water (70 lpcd) to habitants at the tail end	574	427	74
Water quality satisfaction of beneficiary	1,109	876	79
Collection of samples from water supply points for testing	1,109	237	21
Collection and testing of water samples of private sources (wells/ bowris)	1,109	95	09
Awareness of locations of the water testing laboratories	1,109	138	12
Training and awareness generating IEC activities on drinking water provided to the beneficiaries	1,109	184	17
Non-functional water supply schemes due to operation and maintenance	1,109	383	35
Awareness about Field Test Kits (FTK) for water quality test	1,109	118	11
Collection of user charges and their use for operation and maintenance of the schemes	1,109	643	58
Installation of water meters for households for billing/ adequate water purpose	1,109	25	2
Flat charges paid to the Department irrespective of quantity of water being supplied	1,109	851	77

It can be seen from **Table 4.5** that:

- Overall satisfaction level of supply of sufficient water was 80 *per cent* but the satisfactory level of tail end beneficiaries was at 74 *per cent*.
- Though 79 *per cent* of total beneficiaries surveyed were satisfied with water quality being supplied to them, only 21 *per cent* were aware about the collection of samples from water supply points for testing, 12 *per cent* were aware of locations of the water testing laboratories, 17 *per cent* responded positively about training and awareness generation activities on drinking water and only 11 *per cent* were aware of FTKs for water quality test.

4.8 Shortcomings in selected incomplete water supply schemes

Fifteen incomplete drinking water supply schemes from 15 selected divisions were taken up for detailed scrutiny. Details of these schemes are given in **Appendix-2** and the deficiencies noticed in nine schemes during audit have been mentioned in **Table-4.6**.

Table-4.6
Deficiencies in incomplete schemes in test-checked divisions

(₹ in crore)

Name of Scheme	Month of A/A and E/S / Stipulated completion period	Approved cost/ Expenditure	Status of scheme	Audit issues and reply
1. Providing LWSS to PC habitation of Dhaban and Tanda in Mandi district (Baggi division)	January 2017 & September 2019/ 4 years	1.00 & 3.14/1.19	*Incomplete as of September 2021* (running delay: 8 months)- drilling of tube well completed (July 2017)	**Awarding of works (August 2019 to March 2021) of distribution system, pump house, sump well and storage tanks, lack of funds, etc.; and consequent failure to complete the scheme.** The EE stated (October 2021) that the scheme was delayed due to non-availability of land for development of source/ Borewell. However, the Borewell was drilled by the division in July 2017 itself.
2. LWSS to PC habitation of Shira from Ali *Khad* in Bilaspur district (Bilaspur division)	August 2009 and September 2012/ 4 years	1.06/0.71	*Incomplete as of October 2021* (running delay: 61 months)- distribution system of 15382 Rmt. (out of 18470 Rmt.) laid (upto 02/2017) by the contractor	**Non-availability of encumbrance free land for execution of water treatment plant (WTP), pump house, clear water tank and laying of rising main;** **Pumping machinery arranged by the contractor in September 2015 was lying idle due to non-construction of pump house.** The EE stated (October 2021), that the scheme could not be completed due to land dispute at site of WTP, pump house, etc. The Department did not follow proper sequence i.e. ensuring a

Name of Scheme	Month of A/A and E/S / Stipulated completion period	Approved cost/ Expenditure	Status of scheme	Audit issues and reply
				dependable source of water, WTP and pump house.
3. Construction of LWSS Bagwar in Hamirpur district (Bhoranj division)	September 2018/ 4 years	0.80/0.11	*Incomplete as of October 2021*	**Non-execution of scheme by the contractors for more than three years. No action was initiated by the department.** The EE stated (November 2021), that matter for non-execution of works by the contractors will be enquired and necessary action taken.
4. Providing Lift Water Supply Scheme to cantonment Area Dalhousie in Chamba district (Dalhousie division)	Not yet approved.	--/0.19	*Not taken up as of August 2021*	**Non-approval of scheme due to non-availability of forest land.**
5. State of Art Water Treatment for Potable Tapped Water for improvement of WSS Ramnagar Shamnagar in Kangra district (Dharamshala division)	November 2018/ 5 years	5.46/1.50	*Incomplete as of February 2022* (The scheme was held up for more than two years)	**Non-availability of land.** **₹ 1.49 crore was paid to contractor (October 2019) but not yet adjusted; and Excess secured advance of ₹ 32.71 lakh was paid to contractor but indenture not signed.** The EE stated (March 2022) that the inhabitants had initially agreed to donate the land but later refused. The site was being changed.
6. Augmentation of water supply scheme Raison Mali Pather in Kullu district (Kullu-I division)	December 2014/ 4 years	2.56/2.30	*Incomplete as of July 2021* (The scheme commissioned in March 2021 without construction of WTPs)	**Non-awarding the work of sedimentation tank and slow sand filter beds of Phase-I as of July 2021;** **Non-execution of the work of sedimentation tank and slow sand filter beds (Phase–II) awarded (August 2016) to the contractors.** The EE stated (August 2021) that the *nallah* source was initially proposed but during execution the water for scheme was tapped from the spring source for which there was no need for sedimentation tanks and filter beds. The reply is not acceptable as construction of WTP in all new water supply schemes was mandatory as per instructions of the department (March 2016).

Name of Scheme	Month of A/A and E/S / Stipulated completion period	Approved cost/ Expenditure	Status of scheme	Audit issues and reply
7. Augmentation of 8 Nos. LWSS in Shimla district (Matiana division)	March 2012/ 5 years	12.79/9.42	*Incomplete as of February 2022* (Work of pump house (2nd stage) and laying of distribution system in progress.)	**Non-availability of suitable site for construction of water treatment plant and pump house of first stage;** **Pumping machinery (₹ 2.18 crore) arranged by the contractor in August 2016 for first and second stages lying idle as of February 2022;** The EE stated (March 2022) that the scheme had been delayed due to non-clearance of FCA and site disputes. The fact, however, remains that the Department did not follow the sequence of first ensure a dependable source of water, WTP and pump house for running the scheme.
8. Providing Water Supply Scheme to not covered (NC) / partially covered (PC) habitations under WSS Kusmal Bagora in Kangra district (Palampur division)	February 2012/ 3 years	0.62/0.59	*Incomplete as of December 2021* (running delay: 82 months)-work of laying of distribution system completed (07/2014)	**Non-execution of work due to non-availability of forest clearance.** The EE stated (January 2022) that case for diversion of forest land for the intended purpose initiated but approval awaited.
9. Water Supply Scheme to left out Hadala Banetu in Chamba district (Salooni division)	March 2014/ 3 years	0.48/0.29	*Incomplete as of September 2021* (running delay: 54 months)-distribution system of 6,810 Rmt. (out of 20615 Rmt.) laid upto October 2015 by the contractor	**The work of intake chamber, RCC storage tank and laying of distribution system awarded October 2014 was not completed by the contractor as of September 2021.** The EE concerned stated (October 2021) that action against the contractor was under consideration.

During the exit conference, the Secretary admitted the facts and stated (December 2022) that the status of incomplete schemes might have now changed. It was further stated that matter would be taken up with respective divisions to initiate action against defaulting contractors.

Conclusion

The State's aim of providing functional household tap connections to 100 *per cent* of rural households had been partially fulfilled (76 *per cent*) by June 2021. The beneficiary population in the test checked divisions could not be provided the targeted quantity and quality of drinking water. There were deficiencies in source, water treatment unit, pumping

machinery, rising/ gravity main, storage tank/ distribution network and automation/ chlorination system which adversely affected the quantity and quality of water supplied to the user population.

Recommendations

The Department may like to take immediate remedial steps to ensure both quality and minimum quantity of promised drinking water to citizens by repairing/ augmenting the water supply installations. It may also like to take feedback of beneficiary population at regular intervals to gauge the efficiency of the schemes.

Chapter-V

Monitoring and Surveillance of Water Quality, Manpower Management and Internal Control and Monitoring

CHAPTER-V

Monitoring and Surveillance of Water Quality, Manpower Management and Internal controls & monitoring

A - Water Quality Monitoring and Surveillance

Water testing is important for monitoring the quality of water supply, verification of the safety of drinking water, investigation of disease outbreaks, as a validation process and to undertake preventive measures. Water quality testing tools need to be used for deciding safety of drinking water at the source; within the piped distribution system; or at the point of supply to consumers. Under Water Quality Monitoring and Surveillance (WQMS) component of National Rural Drinking Water/ Jal Jeevan Mission, water quality laboratories were to be set up and upgraded at State, district and sub-district levels. For setting up/ upgrading laboratories, three *per cent* of NRDWP funds were released to the State while two *per cent* of JJM funds were available for the purpose.

The Department had not set up its own State Level Water Testing Laboratory. A private laboratory was designated as a State Level Water Testing Laboratory and 43 (out of 59) laboratories were having accreditation from NABL as of March 2022.

5.1 Setting-up of water quality testing laboratories

As per JJM guidelines, five *per cent* of tested samples by the district laboratories were to be tested at State laboratories. The aim was to provide safe and adequate drinking water through individual household tap connections to all rural households. As per NRDWP/ JJM guidelines, water quality tests of all drinking water sources are to be conducted at least twice a year for bacteriological contamination and once a year for chemical contamination. The DWSM was also to plan for drinking water testing laboratories to obtain accreditation from National Accreditation Board for Testing and Calibration Laboratories (NABL).

Audit noticed that:

(i) The Department had not set up its own State Level Water Testing Laboratory as of March 2021. However, a private laboratory[1] was designated (March 2016) as a State Level Water Testing Laboratory. The department was unable to conduct required number of water quality tests through the designated State Laboratory.

During the exit conference (December 2022), it was informed that State laboratory had been set up at Dharampur in Mandi district which would be made functional soon.

(ii) Out of total 59 departmental laboratories (district laboratories: 14 and sub-divisional laboratories: 45), 43 laboratories (district laboratories: 14 and sub-divisional laboratories: 29) were having accreditation from NABL as of March 2022.

The Chief Engineer (S&I) stated (March 2022) that process for obtaining NABL accreditation for remaining laboratories was in progress.

[1] M/s Eco laboratories and Consultant Pvt., Ltd. Mohali.

5.2 Availability of required Infrastructure in laboratories

Details of equipment/ infrastructure required as per Uniform Drinking Water Quality Monitoring Protocol (UDWQMP) issued by Ministry of *Jal Shakti*, Government of India and actual available in the water quality testing laboratories in the 20 test-checked divisions are given in **Tables-5.1**, **5.2** and **5.3** below.

Table-5.1
Details of availability of recommended equipment in the 20 laboratories of test-checked divisions

Sl. No.	Equipment required	Number of laboratories having required equipment	Number of laboratories not having required equipment (*per cent*)
1.	pH meter (both lab based and potable type)	15	5 (25)
2.	TDS/ conductivity meter (both lab based and potable type)	17	3 (15)
3.	Nephelometer (turbidimeter)	20	0
4.	Digital balance	20	0
5.	UV - Visible Spectrophotometer	13	7 (35)
6.	Refrigerator	20	0
7.	Water still	10	10 (50)
8.	2 Voltage stabilizer / Inverters	3	17 (85)
9.	1 Hot plate	20	0
10.	Heating mantle	5	15 (75)
11.	Water Bath	16	4 (20)
12.	2 Hot air ovens	6	14 (70)
13.	2 Bacteriological Incubator	8	12 (60)
14.	1 Autoclave	20	0
15.	1 Magnetic stirrer	17	3 (15)
16	Vacuum pump	14	6 (30)
17.	UV laminar Air flow chamber for bacteriological analysis	14	6 (30)
18.	Plate count and colony counter	6	14 (70)
19.	Cool box with icepacks	4	16 (80)
20.	Specific ion meter along with electrodes (for Fluoride and Nitrate etc.)	1	19 (95)
21.	Auto Burette & Auto pipette	11	9 (45)
22.	Thermometers	20	0
23.	Single stage distillation Apparatus	11	9 (45)
24.	Double distillation Apparatus	17	3 (15)
25.	Centrifuge	3	17 (85)

Source: Information supplied by the Department.

The EEs of divisions concerned stated that water tests are conducted through Field Testing Kits (FTKs) where required equipment were not available. However, as per Para 5.1.1 of UDWQMP, all positively tested samples using FTKs were to be referred to the nearest district/ sub-divisional water quality testing laboratory for confirmation. Thus, tests conducted through FTKs were not considered reliable.

The details of availability of recommended equipment of specific utility in the eight District laboratories are given in **Table 5.2**.

Table-5.2
Details of availability of recommended equipment of specific utility in the eight District laboratories

Sl. No.	Equipment required	Number of district laboratories having required equipment	Number of district laboratories not having required equipment (*per cent*)
1.	Microscope	5	3 (38)
2.	Flame protector	0	8 (100)

Sl. No.	Equipment required	Number of district laboratories having required equipment	Number of district laboratories not having required equipment (*per cent*)
3.	Fume cup board	1	7 (88)
4.	Argon, Nitrogen & Oxygen gas cylinders	0	8 (100)
5.	Kjeldahl distillation apparatus	0	8 (100)
6.	Pressure pump	1	7 (88)
7.	Membrane filtration	6	2 (25)

Source: Information supplied by the Department.

Table-5.3
Details of availability of required infrastructure in the laboratories of 20 test-checked divisions

Sl. No.	Infrastructure required	Number of laboratories having required infrastructure	Number of laboratories not having required infrastructure (*per cent*)
1.	Space availability (80 sq.m)	09	11 (55)
2.	Availability of computers	18	02 (10)
3.	Availability of internet	14	06 (30)
4.	Availability of UPS	11	09 (45)
5.	Availability of Inverters (for back up)	02	18 (90)
6.	Printer	17	03 (15)
7.	Telephone facility	05	15 (75)
8.	Air Conditioners	11	09 (45)
9.	Provision of Gas (LPG)	Nil	20 (100)

Source: Information supplied by the Department.

Thus, the laboratories were not equipped with recommended equipment/ infrastructure to carry out the bacteriological and chemical tests at district and sub-district levels.

The Department accepted the facts and assured (December 2022) for review and monitoring of availability of equipment/ infrastructure.

Against the required 84,000 water quality tests to be conducted by 14 District laboratories, only 56,238 samples were got tested during 2019-21. Tests of required 11 (out of 13) water quality parameters had not been conducted in one to 18 test-checked laboratories. The targets of tests fixed during 2016-21 were not commensurate with the quantum of the chemical and bacteriological tests required to be conducted. In the results of 209 water quality samples tested (between May 2016 and February 2021), coliform was observed in five test-checked divisions. Variations in water sample results between two laboratories of a scheme were observed. In two test-checked divisions, expired field testing kits were issued.

5.3 Water quality tests conducted

(i) Tests conducted in District laboratories and State laboratory

As per JJM guidelines, district laboratory was required to test 250 water sources/ samples per month covering all sources randomly spread geographically including the positively tested samples referred by the sub-division/ mobile laboratory for at least 13 basic water quality parameters and five *per cent* of tested samples by the district laboratories were to be cross verified at State laboratories.

Against the required 84,000 water quality tests to be conducted by 14 District laboratories, only 56,238 samples were got tested during 2019-21. The shortfall in achievements of

required tests during 2019-20 and 2020-21 ranged between 32 and 35 *per cent*. Similarly, against the required 2812 water quality cross verification tests to be conducted, only 50 samples were got tested in the designated laboratory during 2019-21 as per details given in **Table 5.4**.

Table-5.4
Details of water quality tests conducted in the district laboratories and designated State laboratory during 2019-21

(Tests in numbers)

Year	No. of district laboratories	Tests required to be conducted by district laboratories	Tests actually conducted by the district laboratories	Shortfall (*per cent*)	Tests required to be conducted by State laboratory	Tests actually conducted by State laboratory	Shortfall (*per cent*)
2019-20	14	42000	28751	13249(32)	1438	27	1411(98)
2020-21	14	42000	27487	14513(35)	1374	23	1351(98)
Total		**84000**	**56238**	**27762(33)**	**2812**	**50**	**2762(98)**

Source: Information supplied by the Department.

(ii) Testing of water quality parameters in laboratories

As per provisions of the Uniform Drinking Water Quality Monitoring Protocol (February 2013)**,** NRDWP and JJM, 13 water quality test parameters were required to be analysed in water testing laboratories in the State.

The details of testing of water quality of the required parameters in the 20 test-checked laboratories are given in **Appendix-4** and parameter-wise details of water quality tests being done in test-checked laboratories are depicted in **Table 5.5**.

Table-5.5
Details of parameter-wise water quality test conducted in test-checked laboratories

Sl. No.	Parameter required	No. of test-checked laboratories which conducted tests on the required parameter	No. of laboratories which had not conducted tests
1.	Potential hydrogen (pH)	20	Nil
2.	Turbidity	19	01
3.	Total dissolved solid (TDS)	19	01
4.	Total hardness	20	Nil
5.	Alkalinity	19	1
6.	Fluoride	08	12
7.	Chloride	19	01
8.	Sulphate	04	16
9.	Nitrate	09	11
10.	Arsenic	02	18
11.	Iron	14	06
12.	Total coliform	18	02
13.	E coli	13	07

Source: Information supplied by the Department.

It can be seen from above table that tests of required 11 (out of 13) water quality parameters had not been conducted in one to 18 (out of 20) test-checked laboratories (Arsenic: 18 laboratories; Sulphate: 16 laboratories; Nitrate: 11 laboratories; Fluoride: 12 laboratories, E. coli: seven laboratories and Iron: six laboratories).

The EEs of divisions concerned stated (August 2021-March 2022) that parameters were not tested due to non-availability of equipment and shortage of staff.

The Chief Engineer cum Director In-charge (S&I) informed (March 2022) that targets have been fixed for water quality tests as per annual action plans. However, the fact remains that the department had not fixed adequate quantum of targets of water quality tests as per JJM guidelines to draw assurance for water quality. The department could achieve only two *per cent* of the tests required, as per JJM guidelines, for water quality tests as indicated in **Table 5.4**.

(iii) Testing of water source for bacteriological and chemical contamination

As per NRDWP/ JJM guidelines, water quality tests of all drinking water sources are to be conducted at least twice a year for bacteriological contamination and once a year for chemical contamination. The details of water quality tests of water sources required to be conducted in the State, targets fixed and achievements thereof during 2016-21 are given in **Table 5.6**.

Table-5.6
Details of water quality tests of water sources required to be conducted in the State, targets fixed and achievements thereof during 2016-21

(Tests in numbers)

Year	Number of water sources	Chemical and bacteriological tests			
		Tests required as per guidelines	Targets fixed by State	Achievement	Excess (+) Shortfall (-) (*per cent*)
2016-17	1,53,722	4,61,166	66,000	71,344	(+)5,344 (8)
2017-18	1,56,091	4,68,273	75,000	78,144	(+)3,144 (4)
2018-19	1,55,440	4,66,320	77,000	76,419	(-) 581(01)
2019-20	1,55,992	4,67,976	1,32,000	1,01,332	(-)30,668(23)
2020-21	1,95,986	5,87,958	2,02,238	1,53,477	(-)48,761(24)
Total		**24,51,693**	**5,52,238**	**4,80,716 (87 *per cent*)**	

Source: Information supplied by the Department.

The targets of water quality tests in the State were achieved during 2016-18 while the shortfall in achievements of targets during 2018-19 and 2020-21 ranged between one and 24 *per cent*. The targets of tests fixed during 2016-21 were not commensurate with the quantum of the chemical and bacteriological tests required to be conducted as per NRDWP/JMM guidelines. The shortfall in targets set when compared to the requirement was 77.5 *per cent*. Thus, there was no assurance on quality of water being provided to the people.

The Chief Engineer cum Director In-charge (S&I) stated (March 2022) that targets have been fixed as per annual action plans. The fact remained that targets were not fixed as per guidelines.

(iv) Failure of bacteriological/ chemical tests and non-initiating of remedial action

Total coliform, faecal coliform, and *E.coli* are all indicators of drinking water contamination. These contaminations are harmful for health. Audit noticed that:

- In five (out of 20) divisions[2], in the results of 209 water quality samples (out of 71,804) tested (between May 2016 and February 2021), coliform was observed.
- In one (out of 20) test-checked division (Hamirpur), samples were collected from seven schemes by the Department and the same were found positive with coliform, E -Coli and excess iron as per details given in **Table 5.7**.

Table-5.7
Details of failed test samples (positive with coliform, E-Coli) in Hamirpur division

Sl. No.	Scheme	Date of sample	Name of test which failed	Date when the sample was found fit	Period when contaminated water was supplied.
1.	Bore No.-1 NIT Computer Centre	26 May 2016	E-Coli	Not repeated	Since 26 May 2016
2.	LWSS Tillu Jalari	16 October 2019	Coliform	22 October 2019	16 October 2019 to 21 October 2019
3.	LWSS Salghoon Ghatta	16 February 2016	E-coli	1 March 2016	16 February 2016 to 28 February 2016
4.	LWSS Salghoon Ghatta	15 September 2021	Coliform	21 September 2021	15 September 2021 to 20 September 2021
5.	LWSS Dhaneta	29 November 2019	E-Coli	Not repeated	Since 29 November 2019
6.	Hand Pump Rail Near GSSS School (Nadaun sub-division)	19 September 2018	Iron	Not repeated	Since 19 September 2018
7.	LWSS Bara Choru	26 February 2021	E-Coli	Not repeated	Since 26 February 2021

Out of seven schemes, the samples were repeated in respect of three schemes but neither any remedial action taken was seen on records, nor the samples were repeated in respect of remaining schemes. Besides, no action was taken to close the schemes. In such circumstances, possibility of water borne diseases could not be ruled out.

The EE, Hamirpur stated (December 2021) that verbal directions are issued to concerned persons (Keyman) for not supplying the water to consumers till the samples are tested fit. However, no records in support of retest and supervision of supply were produced to Audit.

(v) Fictitious reporting of tests conducted in District laboratories

In Kullu-1 division (out of 20 divisions), it was observed that 3833 number of water samples were tested during 2016-21 as per ledger, but in online reporting, 4598 number of water tests were reported for the same period pointing to possible fictitious excess reporting of 765 (20 *per cent*) tests.

(vi) Variations in water sample results between two laboratories of a scheme

There were two sub-divisional laboratories (Garnota and Banikhet) under the control of Dalhousie test-checked division. Scrutiny of results of joint inspection of a selected scheme (Augmentation of WSS to Village Jassure, Dukhar, Bharari and Tikkri) showed that a water sample of the scheme collected from the source and its results were received from both laboratories. In the results of tests received from both the laboratories, variations were observed as per details in **Table 5.8**.

[2] Baggi: 25, Chamba: 07, Kullu-1: 153, Mandi: 13 and Matiana: 11.

Table-5.8
Details of results of laboratories for same samples of a scheme

Sl. No.	Name of parameter	Required range as per Bureau of Indian Standards	Results of Garnota Laboratories	Result of Banikhet laboratories
1.	Turbidity	Up to five NTU	28.25 NTU (unfit)	18 NTU (unfit)
2.	Colour	5 to 15 HU	Normal	20 HU (unfit)
3.	Taste and Odour	Agreeable	Agreeable	Tasteless/odourless
4.	Total Dissolved Solid (TDS)	Upto 2000 mg/litre	16.13 mg/ litre (fit)	171 mg/litre (fit)
5.	Potential hydrogen (pH)	6.5 to 8.5	6.40 (unfit)	7.67 (fit)
6.	Total Hardness	Upto 600 mg/litre	18 mg/litre (fit)	153.33 mg/litre (fit)
7.	Conductance	1000	32.1mmho (fit)	342.2 (fit)
8.	Fluorides	1.0 to 1.5	0.2 (unfit)	Not available

The results showed that the water was unfit for consumption in three parameters. Further, variation in results of same sample in two laboratories cast doubt on the authenticity of water quality testing procedures. The EE Dalhousie assured (September 2021) action.

(vii) Verification of genuineness of samples

As per para 5.4.6 of Uniform Drinking Water Quality Monitoring Protocol, while taking samples from drinking water sources or consumers, the samplers should take the signatures of the operators, Gram Panchayat (GP) members or household members in the relevant register to verify the genuineness of the samples.

Audit noticed that in 10 (out of 20) test-checked divisions[3], 1,28,933 samples were taken (April 2016 to March 2021) for water quality testing. However, the sampler had not maintained any register for taking signatures of the operators, GP members or household members at any place so as to verify the sources/ taps from where these were taken. In the absence of such registers, the genuineness of the samples collected could not be verified in Audit.

The EEs concerned assured (October 2021 to March 2022) for compliance in future.

(viii) Non-referring of failed samples to district/ sub-divisional water quality testing laboratory

Para 5.1.1 of Uniform Drinking Water Quality Monitoring Protocol provides multi-Parameter of Water Quality through FTKs for Physio-chemical analysis. The water quality monitoring will be undertaken by the Department through laboratory tests and water quality surveillance will be undertaken by community through FTKs. All positively tested samples using FTKs (with certain probability of contamination) shall be referred to the nearest district/ sub-divisional water quality testing laboratory for confirmation.

Audit noticed that 67 water samples from various sources in four blocks of *Jal Shakti* Division Bilaspur were tested between October 2017 and October 2019 by Block Resource

[3] Baggi: 13,366, Bhoranj: 506, Chamba 17,614, Dalhousie: 16,529, Dharamshala: 9,424, Hamirpur: 14,432, Kaza: 6,527, Mandi: 27,832, Palampur: 8,055 and Thural: 14,648.

Centres (BRCs) through FTKs and found positive as per norms of Uniform Drinking Water Quality Monitoring Protocol. Following deficiencies were noticed:

- Reporting of failed samples was not made to *Jal Shakti Vibhag*.
- In nine samples pH value was ranging between two and six (permissible limit 6.5 to 8.5) which was highly acidic in nature and could cause health disorders.
- In 29 samples, the value of iron was found at 10 mg/litre which was much higher than permissible limit (0.3 to 1 mg /litre) and could cause health disorders such as diabetes, stomach problems, nausea, etc.
- In 54 samples, bacteriological, chloride, nitrate, fluoride tests were not performed.
- All adversely reported samples were not referred to the nearest district/ sub-divisional water quality testing laboratories for cross verification.

The EEs concerned assured (October 2021) that directions would be issued to the field staff for compliance of the instructions in future.

(ix) Field Test Kits

As per NRDWP/ JJM guidelines, water quality surveillance activities also include use of FTKs at Gram Panchayat (GP)/ Panchayati Raj Institutions (PRIs) level to know the extent of contamination.

Audit noticed:

- **Tests conducted through FTKs**

Details of targets of testing of water sources in nine DWSM using FTKs are given in **Table 5.9**.

Table-5.9
Details of water testing through field test kits in selected DWSM during 2016-21

(Tests in numbers)

Year	Total number of sources	Targets of tests	Tests conducted	Shortfall (*per cent*)
2016-17	1,06,243	3,18,729	63,178	2,55,551 (80)
2017-18	1,06,714	3,20,142	72,878	2,47,264 (77)
2018-19	1,07,011	3,21,033	76,381	2,44,652 (76)
2019-20	1,07,848	3,23,544	89,720	2,33,824 (72)
2020-21	1,11,513	3,34,539	88,218	2,46,321 (74)
Total		**16,17,987**	**3,90,375**	**12,27,612 (76)**

Source: Information supplied by Department.

Shortfall in water quality tests through FTKs ranged between 72 and 80 *per cent* which indicated that the Department had not ensured that the required numbers of tests of the sources were conducted as envisaged in the targets.

- **Issue of expired field test kits**

➢ In Keylong division, the EE-cum-Member Secretary had purchased 20 FTKs and 21 refills during March 2017 and March 2019 and distributed the same to the Junior Engineers and Gram Panchayats in the district between December 2018 and September 2020 after its expiry. Thus, expenditure incurred on purchase of FTKs and refills proved wasteful to that extent.

- In Kaza division, 30 FTKs received in April 2017 from DWSM Keylong were distributed to Junior Engineers[4] during October 2018 after date of their expiry.

The EE, Keylong division stated (August 2021) that the FTKs could not be distributed due to shortage of staff. The EE, Kaza division did not furnish reasons for non-conducting of test through FTKs.

(x) Water tests not conducted through Chloroscopes

As per Departmental instructions (August 2008), at least two samples should be taken from each scheme every month in order to test the quantity of chlorine in the water through chloroscopes. The results of such tests are required to be sent to the Superintending Engineer (Planning and Investigation).

Audit noticed that in four (out of 20) test-checked divisions[5], the EEs concerned had purchased (March 2016 to March 2021) 976 chloroscopes of ₹ 16.85 lakh and distributed (March 2016 to March 2021) to sub-divisions. However, no test to measure the quantity of chlorine in water was conducted by the sub-divisions through these chloroscopes and providing safe drinking water to households could not be assured. Besides, the chloroscopes were lying unused/ idle in the sub-divisions.

The EEs concerned stated (September 2021 to January 2022) that no tests were conducted through chloroscopes and instructions shall be adhered to strictly. The replies did not explain reasons for non-conducting of test through the chloroscopes.

(xi) Issue of bleaching powder after expiry of its best use life

Bleaching powder is used in the process of disinfection of water and this chemical is also known as disinfectant which means the chemical which kills bacteria. Further, as per instructions issued (March 2016) by the Engineer-in-Chief, JSV, bleaching powder must be consumed within three months from the date of manufacturing so that its strength is not reduced.

Audit noticed in 11 (out of 20) divisions[6] that 92,849 kg bleaching powder valuing ₹ 22.83 lakh received by the divisions between September 2016 and February 2021 was issued between February 2017 and December 2021 to various water supply schemes with a delay of one to 27 months after three months from the date of receipt (although manufacturing date was not available) of bleaching powder which indicated that the bleaching powder was issued after expiry of the best use life of three months in contravention of the instructions *ibid*. Thus, drinking water was supplied to households without proper chlorination as bleaching powder's strength as disinfectant reduces after three months.

The Department assured (December 2022) for review of the matter.

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4 Kaza, Kee, Lossar, Sumling and Tabo.

5 Bilaspur: 630 (₹ 11.97 lakh); Jhandutta: 200 (₹ 3.80 lakh); Kullu-1: 110 (₹ 0.81 lakh); and Mandi: 36 (₹ 0.27 lakh).

6 Bhoranj: 3,500 kg; Chamba: 4,113 kg; Chauntra: 4,850 kg; Dalhousie: 7,800 kg; Dharamshala: 32,550 kg, Hamirpur: 21,124 kg, Keylong: 1,100 kg, Kullu-1: 8,540 kg, Mandi: 3,554 kg, Matiana: 3,500 kg. and Salooni: 2,218 kg.

5.4 Water Borne Diseases reported in the State

Audit noticed that due to quality problem in the water, various water borne diseases (acute diarrhea/ gastroenteritis, viral hepatitis, etc.) were reported in the state as per details given in **Table 5.10**.

Table-5.10
Details of prevalence of water borne diseases in the State during 2016-21

(In numbers)

Year	Acute Diarrhea/ gastroenteritis and dysentery	Viral hepatitis (jaundice)	Enteric fever (typhoid)	Total
2016	222596	3073	14403	240072
2017	250636	683	14952	266271
2018	227317	471	16017	243805
2019	260644	532	14206	275382
2020	159009	272	7692	166973
2021	96874	136	5237	102247
Total	**1217076**	**5167**	**72507**	**1294750**

Source: Information supplied by Deputy Mission Director, National Health Mission.

During the period covered under PA, 12,94,750 instances of water borne diseases were reported in the State which indicates that the quality of water being supplied through the drinking water schemes was not appropriate.

B - Manpower Management

Manpower is one of the essential elements of an organization. Without sufficient manpower, the optimal output cannot be achieved.

Overall, 879 technical posts and 2,903 non-technical posts were lying vacant in test-checked divisions as on 31 March 2021. In 20 laboratories of 20 test-checked divisions, against the suggested 160 posts in district level and sub-divisional level laboratories, only 42 persons (26 *per cent*) were engaged.

5.5 Overall staff sanctioned and persons in position

The overall position of staff sanctioned and persons-in-position in the State/ test-checked divisions as of March 2021 is given in **Table 5.11**.

Table-5.11
Position of sanctioned strength and persons-in-position as of March 2021

Category	Sanctioned strength	Persons-in-position	Vacancy (*per cent*)
Overall position in the State			
Technical	6,699	5,089	1,610 (24)
Non-Technical	17,046	15,138	1,908 (11)
Position of test-checked divisions			
Technical	2,472	1,593	879 (36)
Non-Technical	7,513	4,610	2,903 (39)

Source: Information supplied by Department.

Shortage of staff in the Department would have negative impact on efficient execution of water supply schemes/ works.

- **Availability of staff in Laboratories**

Uniform Drinking Water Quality Monitoring Protocol (UDWQMP) (February 2013) issued by Ministry of Drinking Water and Sanitation, GoI prescribed a list of staff required for various levels of laboratories.

Audit observed that:

- In 20 water quality testing laboratories in 20 test-checked divisions, against 160 posts in district level laboratories (DLLs) and sub-divisional level laboratories (SDLLs), 42 personnel (26 *per cent*) were engaged as of March 2021 as per details in **Appendix-5** and position of availability of staff in the laboratories in brief is given in **Table 5.12**.

Table-5.12
Details of staff available in the Laboratories *vis-à-vis* staff suggested under UDWQMP

Type of the Laboratories	Number of staff suggested as per UDWQMP	Number of staff available (Contract/ outsourced)	Shortage (Percentage)
District Level Laboratories	64	17(05)	47 (73)
Sub-Divisional Level Laboratories	96	25(06)	71 (74)

- The UDWQMP further suggested that each laboratory should have at least one regular post of water analyst/ chemist. Audit observed that in six laboratories, the Department had engaged six regular posts of Assistant Chemist while in 11 laboratories, no Assistant Chemist have been engaged on regular basis. The work of chemist was being discharged by 11 contract/ outsourced personnel. Moreover, in three laboratories, no Assistant Chemist was posted, and laboratories were being operated by the laboratory Assistants.

Shortage of staff adversely impacted the achievement of targets fixed by the Department for testing the required number of water samples.

During the exit conference, the Department stated (December 2022) that efforts would be made for deployment of adequate manpower.

5.6 Support activities- Capacity building

As per NRDWP/ JJM guidelines, the funds for support activities are to be utilised for providing support for awareness, creation and training activities taken up by the communication and capacity development units (CCDU) under the Water and Sanitation Support Organisation (WSSO), setting up of district and sub-divisional water quality testing laboratories, supply of field test kits and training to grass root level workers for water quality tests and providing hardware and software support for MIS at the district and sub-divisional level to bring in more accountability, effective monitoring and transparency in delivery of services.

Activity-wise targets and achievements

The component-wise details of targets and achievements under support activities for 2016-21 are given in **Table 5.13**.

Table-5.13
Component-wise details of targets fixed and achievements under support activities for 2016-21

(In numbers)

Year	Targets			Achievement		
	IEC activities[7]	HRD (training)	Computer trainings	IEC activities	HRD	Computer
2016-17	27,438	4,214	20	13,554 (49)	3,606 (86)	0
2017-18	27,226	9,733	20	17,802 (65)	6,182 (64)	0
2018-19	26,925	9,733	20	4,015 (15)	8,967 (92)	23
2019-20	13,835	6,473	22	1,10,036 (795)	4,605 (71)	2
2020-21	45,053	17,937	5	4,55,954 (1012)	5,722 (32)	0
Total	**1,40,477**	**48,090**	**87**	**6,01,361**	**29,082**	**25**

Source: Information supplied by the WSSO.
IEC: Information, education and communication, HRD: Human resource development.

It would be seen from above table that:

- During 2019-21, the overall achievement under IEC was higher than the targets fixed. However, there was shortfall in achievements of targets under IEC during 2016-19 (2016-17: 51 *per cent*; 2017-18: 35 *per cent;* and 2018-19: 85 *per cent*).
- Shortfall in achievements of the targets under HRD (training) during 2016-21 ranged between eight and 68 *per cent*.

C - Internal Controls and Monitoring

The Department had not set up Vigilance and Monitoring Committees (VMCs) at State/ District/ Village levels to monitor progress and exercise vigilance in respect of water supply schemes. Department had also not constituted the review committee for major works costing ₹ five crore and above in the state which indicated that the major works were not reviewed by the committee at apex level. Percentage shortfall in conducting inspections of works of water supply schemes during 2016-21 by SEs ranged between 89 and 97 while that of EEs ranged between 90 and 97. The mechanism of social audit had not been put in place by the Department to ensure transparency in execution as well as spending on the water supply schemes.

5.7 Monitoring

5.7.1 The guidelines of NRDWP provide that vigilance and monitoring committees (VMCs) at State/District/ Village levels were required to be set up to monitor the progress and exercise vigilance in respect of water supply schemes.

The Department, however, had not set up the VMC at State/ district/ village levels during 2016-21. In the absence of the VMC, the implementation of the water supply schemes was not monitored periodically leading to many schemes lagging behind their scheduled date of completion.

5.7.2 Rule 90 of Himachal Pradesh Financial Rules 2009 provides for constitution of a review committee consisting of the executing agency, the Head of the Department and a

[7] Information, Education and Communication activities like water quality monitoring, training of NGOs, audio-visual publicity, hoardings and wall writings, slogans, picture frames, group meetings, etc.

representative each from the Administrative Department and the Finance Department to review the progress of the works costing five crore rupees and above.

Audit noticed that the Department had not constituted the review committee for major works costing ₹ 5.00 crore and above in the State as of May 2022. Resultantly, in 14 (out of 20) test-checked divisions[8], out of 58 schemes each having an approved cost above ₹ five crore or more (approved for ₹ 992.22 crore during 2016-21), three schemes were completed in which there was a delay of 22 months in one scheme, one scheme was held up, 16 schemes had not started and 38 schemes were in progress in which, there were delays ranging from four to 26 months.

5.7.3 Chapter 6 of Operational Guidelines of JJM provides that for all works executed under the Mission, third party inspection and certification before payment was mandatory to gain assurance of execution of quality work.

Audit noticed in 15 test-checked divisions[9] that payment of ₹ 34.75 crore was made (January 2020-September 2021) to the contractors concerned for the execution of 531 sub-works without inspection and certification by the third party as required under the provision of guidelines of JJM *ibid*. In the absence of inspections of works by the third party before releasing payments as envisaged, the authenticity and quality of execution of works could not be verified in Audit.

5.7.4 As per directions (June 2006) issued by the E-in-C, SE was to conduct one inspection of works per division in a month and EE was to conduct 10 inspections per month in the division. Further, as per instructions issued (May 2017) by the E-in-C, a register for inspection/ monitoring of water supply schemes was to be maintained by the field offices and action taken report in this regard was to be submitted to E-in-C on monthly basis.

Audit noticed that against the required inspections by the SEs and EEs of the test-checked divisions there was shortfall of 12,549 inspections (SEs: 1,119 and EEs: 11,430) out of required 13,200 inspections during 2016-21. The works therefore were not adequately supervised.

During exit conference, the Secretary stated (December 2022) that sufficient mechanism is available for checks and balances at all levels, but efforts would be made to strengthen their role.

5.8 Social Audit

As per the programme guidelines, social audit is to be conducted by the community-based organizations (VWSC/ User groups) after every six months to ensure that the works undertaken are as per specification and to provide feedback according to the locally

[8] Baggi: two schemes (₹ 20.61 crore); Bilaspur: six schemes (₹ 146.41 crore); Bhoranj: two schemes (₹ 57.80 crore); Chauntra: two schemes (₹ 46.30 crore); Dharamshala: five schemes (₹ 60.89 crore); Hamirpur: two schemes (₹ 23.66 crore), Jhandutta: six schemes (₹ 143.98 crore), Kullu-1: five schemes (₹ 67.17 crore), Mandi: seven schemes (₹ 85.79 crore), Matiana: one scheme (₹ 7.91 crore), Palampur: seven schemes; (₹ 110.88 crore), Salooni: two schemes (₹ 50.35 crore), Shimla: three schemes (₹ 57.45 crore) and Thural: eight schemes (₹ 113.02 crore).

[9] Baggi, Bhoranj, Bilaspur, Chamba, Chountra, Dalhousie, Hamirpur, Jhandutta, Keylong, Kullu-1, Mandi, Matiana, Rampur, Reckong Peo and Salooni.

developed yardsticks for monitoring as well as key indicators for measuring consumer's satisfaction.

Audit noticed that in all the 20 test-checked divisions, the mechanism of social audit had not been put in place by the Department to ensure transparency in execution as well as spending on the water supply schemes.

During exit conference, the Secretary admitted the facts and assured (December 2022) that the possibility of conducting social audit would be ensured in future.

5.9 Complaints of water in selected divisions

Details of complaints relating to water supply in 12 (out of 20) test-checked divisions during 2016-21 are given in **Table 5.14**.

Table-5.14
Details of complaints relating to water supply in 12 (out of 20) test- checked divisions
(In numbers)

Year	Complaints received	Complaints disposed off during April 2016 to March 2021	Complaints outstanding on 31 March
2016-17	2657	1701	956
2017-18	2914	1683	1231
2018-19	2581	1703	878
2019-20	3946	2993	953
2020-21	6051	4583	1468

Source: Information supplied by the Department.

It can be seen from above table that large numbers of water supply complaints were outstanding during 2016-21. Besides, the divisions concerned had not maintained proper records of the complaints to show the dates of settlement of each complaint, action taken in brief, etc.

The EEs concerned stated (July 2021 to February 2022) that complaints were disposed off as and when received but not shown disposed off in the complaint registers. The fact, however, remained that the divisions had not shown any records in support of disposal of the pending complaints in the relevant registers.

Conclusion

The water quality monitoring and surveillance mechanism was not functioning effectively to ensure availability of clean and safe drinking water to the population at all times. The laboratories were not equipped with the recommended equipment, thereby putting the reliability of even those water quality tests conducted under doubt. The Department had not set up its own State Level Water Testing Laboratory. The mandatory NABL accreditation of all district and sub-divisional water quality testing laboratories was not ensured which were understaffed which adversely impacted their performance.

The monitoring of the schemes was poor as the institutional mechanism for monitoring and internal control through various committees was non-functional and community participation through social audit was a non-starter.

Recommendations

The Government may consider:

(i) *Setting up and operationalising State level water quality testing laboratory and ensure to review of required percentage of samples tested in the district laboratories.*

(ii) *Upgrading and ensuring accreditation of all laboratories from National Accreditation Board for Testing and Calibration Laboratories to gain assurance of availability of standard water quality for citizens.*

(iii) *Engaging adequate and qualified staff for the laboratories.*

(iv) *Strengthening internal control mechanism by setting up of vigilance and monitoring committees to monitor progress and exercise vigilance in respect of water supply schemes.*

(CHANDA MADHUKAR PANDIT)
Principal Accountant General (Audit)
Himachal Pradesh

Shimla
Dated: 22 March 2023

Countersigned

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India

New Delhi
Dated: 24 March 2023

Appendices

APPENDICES

Appendix-1

(Referred to in Paragraphs 4.2 and 4.6)

Statement showing the detail of completed water supply schemes scrutinized in test-checked divisions

(₹ in lakh)

Sr. No.	Name of division	Name of scheme	Approval		Programme	Stipulated period	Date of completion	Expenditure incurred	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount								
1.	Baggi	LWSS Karnehra, Samlon, Pipli and Kotlu, Mandi district.	Nov-10	205.05	NRDWP	2 years	Sep-17	263.37	2863	16	16	9.33 litres per second
2.	Baggi	LWSS Moviseri & its adjoining villages, Mandi district.	Jun-13	371.09	NABARD	4 years	Oct-20	432.36	3025	42	42	289795 litres per day (LPD)
3.	Bilaspur	Improvement of LWSS Dalli, Bilaspur district.	Mar-12	104.97	NABARD	3 years	Nov-16	104.97	7632	14	14	667790 LPD
4.	Bilaspur	Providing LWSS to PC and NC hamlets of census villages in GP Kutehla, Tanbol and Talli Zakatkhana , Bilaspur district.	Oct- 09	375.14	NRDWP	4 years	May-17	365.12	7881	70	70	517193 LPD
5.	Bhoranj	Providing LWSS to PC habitation under LWSS Jakhyal phase-II and LWSS Karohata, Hamirpur district.	Oct-18	279.89	NRDWP	5 years	Oct-21	204.52	2766	20	20	242060 LPD
6.	Bhoranj	Providing Water supply to Harizan Basti Kathialwin under LWSS Karohta, Hamirpur district.	Feb-14	60.52	SCCP	3 years	Sep-20	69.18	640	1	1	56350 LPD
7.	Chamba	Augmentation of WSS Sach, Rathiyar, Bakatpur and Draman, Chamba district.	Mar-15	84.32	NABARD	3 years	Jul-20	138.67	2135	33	33	197610 LPD
8.	Chamba	Augmentation of all drought effected WSS in GP Uteep, Bat, Luddu and Belly from Ghrosan Nallah, Chamba district.	Jul-11	1286.27	NABARD	3 years	Apr-17	1400.97	13813	13	13	987844 LPD
9.	Chountra	PWSS to PC habitation under GP Matroo Badeher & Talkehar, Mandi district.	Jan-11	149.61	NRDWP	3 years	Dec-20	92.40	2939	5	5	271950 LPD
10.	Chountra	Providing Water supply to NC/PC habitation under WSS Dul Panjajan and Dagon, Mandi district.	Jan-11	244.62	NRDWP	4 years	Mar-18	168.44	1104	16	16	70 LPCD

Sr. No.	Name of division	Name of scheme	Approval		Programme	Stipulated period	Date of completion	Expenditure incurred	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount								
11.	Dalhousie	Augmentation of WSS to Village Jassure, Dukhar, Bharari and Tikkri, Chamba district.	Jan-09	60.77	SCCP	3 years	Dec-17	118.82	2557	61	61	354240 LPD
12.	Dalhousie	Augmentation of WSS Banooni Awan in G.P.Awan, Chamba district.	May-12	89.60	NABARD	3 years	Jul-18	84.77	2232	35	35	211290 LPD
13.	Dharamshala	Improvement of Water Supply Scheme to Dharamshala Town, Kangra district.	Mar-13	2085.00	UDD	5 years	Apr-17	3070.64	37777	NA	NA	10267855 LPD
14.	Dharamshala	Improvement and Augmentation of Water Supply Scheme of Dari Barol, Kangra district.	Oct-14	167.10	NABARD	4 years	May-19	192.00	9161	6	6	1509920 LPD
15.	Hamirpur	Improvement of LWSS Lagwalti Jangle and LWSS Bhatlamber, Hamirpur district.	May-12	47.31	NABARD	3 years	Oct-20	56.55	2765	2	2	70 litres per capita per day (LPCD)
16.	Hamirpur	Improvement of LWSS Kareri Takroon Gwal Pather and Hathol for improving WSS to Harijan Basties in Village Badhera Barta Kardi and Banoh, Hamirpur district.	Nov-15	48.52	SCCP	3 years	Mar-18	94.31	2955	11	11	70 LPCD
17.	Jhandutta	LWSS Barad Manan, Bilaspur district.	Jun-13	150.17	NABARD	3 years	Nov-18	159.84	2931	10	10	294775 LPD
18.	Jhandutta	LWSS to PC hab. of village Dhararsani and its adjoining villages and Aug. & Imp of LWSS to PC habitations of Nerus, Bhajwan & its adjoining villages, Bilaspur district.	Aug-12	294.15	NRDWP	3 years	Apr-18	241.03	3538	16	16	333180 LPD
19.	Kaza	Augmentation of LWSS Kaza in GP Kaza, Lahaul & Spiti district.	Jun-16	182.28	NABARD	3 years	Aug-20	489.56	1663	2	2	417555 LPD
20.	Kaza	Providing LWSS to NC/PC habitation of census village Tabo, Lahaul & Spiti district.	Jun-17	139.09	NRDWP	3 years	Oct-20	124.11	671	1	1	160160 LPD
21.	Keylong	Augmentation of LWSS Tandi, Lahaul & Spiti district.	Sep-16	38.64	TASP	4 years	Oct-20	34.85	194	1	1	23920 LPD
22.	Keylong	Prov. WSS to PC Habitation Gaushal, Lahaul & Spiti district.	Feb-18	20.36	NRDWP	3 years	Oct-19	13.82	419	1	1	35210 LPD

Sr. No.	Name of division	Name of scheme	Approval		Programme	Stipulated period	Date of completion	Expenditure incurred	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount								
23.	Kullu-1	Water Supply Scheme Dawara, Kullu district.	Jul-10	88.31	NABARD	3 years	May-16	88.35	1275	3	3	118410 LPD
24.	Kullu-1	Water Supply Scheme Dobhi Shim, Kullu district.	Oct-14	72.70	NABARD	3 years	Dec-20	83.97	696	2	2	Not available
25.	Mandi	Providing LWSS from Juni *Khad* to Upper Pandoh and its adjoining villages, Mandi district.	Oct-09	366.72	NABARD	3 years	Jul-16	410.89	6899	47	47	731690 LPD
26.	Mandi	PLWSS to NC/PC hab. Suka Kun and its adjoining villages in GP Baggi, Nichla Lot, Sai, Kasan and Sehli, Mandi district.	Oct-08	502.62	NRDWP	3 years	2017	482.32	6271	38	38	596480 LPD
27.	Matiana	LWSS to NC habitation Cheog Dadas and Dehan etc., Shimla district.	Mar-12	95.07	NRDWP	3 years	Nov-20	130.69	922	11	10	85330 LPD
28.	Matiana	Providing LWSS from Swari *Khad* (Behra *Khad*) to vill. Nanja Gharal Kirty in GP Kirty, Shimla district.	Nov-13	260.09	NABARD	3 years	Feb-21	227.57	3167	16	16	318640 LPD
29.	Palampur	PWSS to PC habitation Banuri, Banuri Khas, Kangra district.	Mar-15	357.41	NRDWP	4 years	Dec-20	120.57	9440	6	6	868390 LPD
30.	Palampur	Water Supply scheme Jia Gopalpur Phase-1st, Kangra district.	May-12	114.10	NABARD	5 years	Feb-20	122.10	6362	15	15	590145 LPD
31.	Rampur	Providing LWSS from Kashapat *Khad* to Dansa (in GP Dansa) via Pataina Kuhal and Chiksa, Shimla district.	Jan-13	1595.34	NABARD/ NRDWP	4 years	Aug-17	1913.62	8647	75	75	773488 LPD
32.	Rampur	LWSS Kharahan *Khad* to Jahu, Kofradhar in GP Kharahan, Shimla district.	Mar-12	285.43	NABARD	4 years	May-17	292.41	3384	33	33	322100 LPD
33.	Reckong Peo	Providing WSS from Chhamble to Pangi, Kinnaur district.	Mar-07	34.18	TASP	3 years	Apr-16	26.18	228	5	1	22820 LPD
34.	Reckong Peo	Providing WSS to NC/PC habitation Sosaring, Kinnaur district.	Sep-19	9.02	JJM	6 months	Dec-20	6.40	41	1	1	95 LPCD
35.	Salooni	Improvement of WSS Bachuni Pukhri Phase-II and WSS Danoon, Chamba district.	Apr-17	26.62	BASP	1 year	Feb-20	26.61	900	14	14	80025 LPD

Sr. No.	Name of division	Name of scheme	Approval		Programme	Stipulated period	Date of completion	Expenditure incurred	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount								
36.	Salooni	Remodeling/Augmentation of WSS Bhunad Bhalogi, Chamba district.	Jul-18	115.28	NABARD	3 years	Jun-21	119.40	1161	21	21	110380 LPD
37.	Shimla	LWSS Tube Well Mehli to Pujarli and adjoining villages, Shimla district.	Mar-08	352.82	NABARD	5 years	Jul-19	372.81	3895	24	24	745780 LPD
38.	Shimla	LWSS to Village Shirgulli Kadrain and Balghar Ghassigoan Madhog, Shimla district.	Sep-06	83.83	ARWSP/ NRDWP	4 years	May-16	135.62	1478	30	30	125770 LPD
39.	Thural	Improvement & Augmentation of source level LWSS Jharet Rajhoon & LWSS Kiarwan From Neugal *Khad,* Kangra district.	May-11	705.15	NABARD	1 year	Mar-20	662.61	9495	64	64	896735 LPD
40.	Thural	Providing LWSS to PC habitation of census village Khajurnu & Rapota, Kangra district.	Mar-11	97.49	NRDWP	3 years	Oct-17	106.88	945	6	6	87430 LPD
		Total		**11646.65**				**13249.30**	**176867**		**456**	

Appendix-2

(Referred to in Paragraphs 4.6 and 4.8)

Statement showing the detail of incomplete water supply schemes scrutinized in test-checked divisions

(₹ in lakh)

Sr. No.	Name of division	Name of Scheme	Approval		Program-me	Stipulated period	Expenditure	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount							
1.	Baggi	LWSS to PC habitation of Dhaban & Tanda in GP Dhaban & Lohara, Mandi district.	Jan-17	99.80	NRDWP	4 years	47.67	2208	3	0	313595 LPD
2.	Bilaspur	LWSS to PC habitation of Shira from Ali *Khad,* Bilaspur district.	Sep-12	105.72	NRDWP	4 years	70.83	1293	1	0	122100 LPD
3.	Bhoranj	Construction of LWSS Bagwar, Hamirpur district.	Sep-18	79.70	State	4 years	92.50	1148	4	0	1.80 LPS
4.	Chamba	LWSS for a group of village Samoh, Drabbla, Butkar, Bangotu Dhar, Seri Niula etc., Chamba district.	Jan-13	432.55	NABARD	3 years	435.80	3085	141	141	287340 LPD
5.	Chountra	Construction of Aug. of WSS Lad Bharol (Under SCCP), Mandi district.	Jul-17	79.32	SCCP	2 years	114.05	874	5	0	70 LPCD
6.	Dalhousie	Providing Lift Water Supply Scheme to cantonment Area Dalhousie, Chamba district.	Not obtained	0	NA	NA	NA	NA	NA	NA	NA
7.	Dharamshala	State of Art Water Treatment Plant for potable tapped water for Improvement of source of WSS Ramnagar Shamnagar, Kangra district.	Nov-18	546.00	Smart City	3 years	149.62	7862	2	0	2067095 LPD
8.	Hamirpur	Providing Separate drinking water supply scheme to village Loungni Karot, etc., Hamirpur district.	Jun-13	214.90	NABARD	5 years	262.47	4213	26	0	398560 LPD
9.	Jhandutta	LWSS Chounta Jangle Thatal, Bilaspur district.	Jul-18	93.99	NABARD	3 years	16.27	618	4	0	64330 LPD
10.	Kullu-1	Augmentation of WSS Raison Mali Pather in GP Raison & Bench, Kullu district.	Dec-14	255.82	NABARD	4 years	230.19	3755	15	15	349710 LPD

Sr. No.	Name of division	Name of Scheme	Approval		Program-me	Stipulated period	Expenditure	Present population	Habitation required to be covered	Actually covered	Water requirement
			Month	Amount							
11.	Matiana	Augmentation of 8 Nos. LWSS in Matiana under IPH Sub-Division Matiana, Shimla district.	Mar-12	1279.00	NRDWP	5 years	941.71	14173	276	0	1189610 LPD
12.	Palampur	Construction of Providing WSS to NC/PC habitation under water supply scheme Kusmal Bagora, Kangra district.	Feb-12	61.88	ARWSP	5 years	59.32	1820	5	0	70 LPCD
13.	Rampur	LWSS from Machhada *Khad* to Khanewli Group of villages in GP Devnagar, Shimla district.	Feb-17	220.00	NABARD	4 years	268.59	1918	14	0	195650 LPD
14.	Salooni	Tapping additional source to WSS Hadla Banetu Phase-II in G.P. Brangal, Chamba district.	Mar-14	48.31	BASP	3 years	92.50	247	3	0	70 LPCD
15.	Thural	Augmentation of WSS Darang Dhoran Ghanetta, Kangra district.	Sep-11	234.00	NABARD	1 year	183.67	3996	6	0	375790 LPD
		Total		**3750.99**			**2204.34**				

Appendix-3

(Referred to in Paragraph 4.6)

Inadequate supply of water in completed schemes of selected divisions

Sr. No.	Name of division	Name of scheme	Population as per DPR*	Total water requirement per day (in litres)	Water lifted/ available during a day (in litres)	Water supplied to beneficiaries in LPCD	Impact due to inadequate supply of water
1.	Hamirpur	Improvement of LWSS Lagwalti	3349	234430 (at the rate of 70 LPCD)	129216	39	Beneficiaries stated in survey that water is supplied insufficient in summer.
		Improvement of LWSS Kareri Takroon Gwal Pather and Hathol	2912	203840 (at the rate of 70 LPCD)	64516	22	Acute shortage in summer (beneficiaries stated in survey)
2.	Mandi	LWSS Juni *Khad* to Upper Pandoh	7211	504770 (at the rate of 70 LPCD)	423220	59	In survey, beneficiaries stated that village Chowki, GP Majhwad situated at the tail end of the scheme was facing water problem since long time. People were not getting required amount of water as they confirmed in the survey. They stated that written complaint (April 2021) was made to the Jal Shakti Minister of the State by all villagers but no action has been taken by the Jal Shakti Vibhag to resolve the problem of scarcity of water as of now. They further stated that alternative source i.e. hand pump installed was also non-functional.
		LWSS Suka Kun	7695	538650 (at the rate of 70 LPCD)	519020	67	The villagers of Bathar, Chalahar and Khajroun stated in survey that water supply was not regular (Once in 3 days).
3.	Matiana	LWSS Swari *Khad* to Nanja Gharal	2420	169400 (at the rate of 70 LPCD)	146560	61	The beneficiaries of Kepu village in GP Kirty situated at the tail end of the scheme are facing a severe water problem. People are not getting required amount of water (only once in a week)

Sr. No.	Name of division	Name of scheme	Population as per DPR*	Total water requirement per day (in litres)	Water lifted/ available during a day (in litres)	Water supplied to beneficiaries in LPCD	Impact due to inadequate supply of water
							which they have confirmed in the survey. No action has been taken by the department to resolve the problem of water of the beneficiaries of Kepu village. Besides, water is supplied in alternate day for the beneficiaries of village Nanja and Gharal and twice a week in the village Kirty.
		LWSS Cheog Dadas	1057	73990 (at the rate of 70 LPCD)	64387	61	Village Jagora GP Dadas situated at the tail end of the scheme has a water sufficiency problem. People are not getting required amount of water which they confirmed in the survey (water being supplied from old gravity scheme). Water from new scheme is still not being supplied to the beneficiaries even though village was to be covered under this scheme. No action has been taken by the Department as of now to resolve the problem of scarcity of water to the village of Jagora.
4.	Rampur	LWSS Kashapat to Dansa	9791	685370 (at the rate of 70 LPCD)	424899	43	Water insufficiency in village Keem during summer as stated in survey by the beneficiaries.
		LWSS Kharahan *Khad* to Jahu etc.	3832	268240 (at the rate of 70 LPCD)	221021	58	Irregular supply of water (once in week) in Rera village as stated in survey by the beneficiaries.
5.	Shimla	LWSS Mehli Pujarli	5534	664080 (at the rate of 120 LPCD)	403200	73 (against requirement of 120 LPCD)	Beneficiary of Dhamechi intimated in survey that 15 connections against norm of 6 connections from half inch distribution pipe were released, due to which insufficient water is being received.

Sr. No.	Name of division	Name of scheme	Population as per DPR*	Total water requirement per day (in litres)	Water lifted/ available during a day (in litres)	Water supplied to beneficiaries in LPCD	Impact due to inadequate supply of water
							Beneficiary intimated in survey that the habitations i.e. Malai and Dhala of Dhamechi were not connected with the scheme so for. Beneficiaries intimated that supply of water is not regular/ proper (in alternate days).

Source: Information supplied by the Department

***Note-Present population (2021) has been calculated on the basis of population given in DPRs of the schemes.**

Appendix-4

(Referred to in Paragraph 5.3 (ii))

Details of parameters for water quality tests conducted by laboratories in test-checked divisions

Name of laboratory	pH	Turbidity	TDS	Total Hardness	Alkalinity	Fluoride	Chloride	Sulphate	Nitrate	Arsenic	Iron	Total coliform	E. coli
Baggi	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	No
Bhoranj	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No
Bilaspur	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes
Chamba	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Dalhousie	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes
Dharamshala	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Hamirpur (at Hathli)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes
Hamirpur (Didwin Tikker)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No
Jhanduta (at Ghumarwin)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No
Kaza	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Kullu (at Katrain)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No
Kullu (at Shamshi)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes
Keylong	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes
Mandi	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes	Yes
Matiana (at Thoeg)	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	Yes	Yes	Yes
Palampur (at Panchrukhi)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Reckong Peo	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes
Rampur	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Salooni (at Koti)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes
Thural	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No

Source: Information supplied by the Department.

Appendix-5

(Referred to in Paragraph 5.5)

Statement showing the detail of availability of staff in the test-checked laboratories

Sr. No.	Name of Division	Name of laboratory	Chemist/ Assistant chemist/ water analyst		Microbiologist/ Bacteriologist		Laboratory Assistant		Lab Attendant		Data Entry Operator		Sampling Assistant	
			SS	PIP	SS	PIP	SS	PIP	SS	PIP	SS	PIP	SS	PIP
1.	Baggi	SD Lab at Baggi	1	1 (R)	1	0	2	1	1	0	1	0	2	0
2.	Bhoranj	SD Lab at Bhoranj	1	1 (O)	1	0	2	1	1	0	1	1	2	0
3.	Bilaspur	Distt. Lab at Bilaspur	1	1 (R)	1	0	2	1	1	1	1	0	2	0
4.	Chamba	Distt. Lab at Chamba	1	1 (C)	1	0	2	0	1	0	1	0	2	0
5.	Dalhousie	SD Lab at Banikhet	1	0	1	0	2	1	1	0	1	0	2	0
6.	Dharamshala	Distt. Lab at Dharamshala	1	1 (C)	1	0	2	1	1	0	1	0	2	0
7.	Hamirpur	SD Lab at Didwin Tikker	1	1 (C)	1	0	2	1	1	0	1	0	2	0
8.	Jhandutta*	SD Lab at Ghumarwin	1	1 (R)	1	0	2	1	1	0	1	0	2	0
9.	Hamirpur	Distt. Lab at Hamirpur	1	1 (C)	1	0	2	1	1	0	1	0	2	0
10.	Kullu-1	SD Lab at Katrain	1	0	1	0	2	1	1	0	1	0	2	1
11.	Kaza	SD Lab at Kaza	1	1 (O)	1	0	2	0	1	0	1	0	2	0
12.	Keylong	Distt. Lab at Keylong	1	1 (O)	1	0	2	0	1	0	1	1	2	1
13.	Kullu-1	Distt. Lab at Kullu	1	1 (R)	1	0	2	0	1	0	1	0	2	1
14.	Mandi	Distt. Lab at Mandi	1	1 (O)	1	0	2	1	1	0	1	0	2	2
15.	Palampur	SD Lab at Panchrukhi	1	0	1	0	2	2	1	0	1	0	2	0
16.	Rampur	SD Lab at Rampur	1	1 (R)	1	0	2	1	1	0	1	0	2	0
17.	Reckong Peo	Distt. Lab at Reckong Peo	1	1 (R)	1	0	2	0	1	0	1	0	2	0
18.	Salooni	SD Lab at Koti**	1	1 (C)	1	0	2	0	1	0	1	0	2	0
19.	Matiana	SD Lab at Theog	1	1 (C)	1	1	2	1	1	0	1	0	2	0
20.	Thural	SD Lab at Thural	1	1 (C)	1	0	2	1	1	1	1	0	2	0
	Total		**20**	**17**	**20**	**1**	**40**	**15**	**20**	**2**	**20**	**2**	**40**	**5**

Source: Information supplied by the Department. Note: C: Contract; O: Outsourced; and R: Regular.

*** Sub-divisional laboratory is under Jal Shakti Division Ghumarwin. The water samples of JSD Jhandutta were tested in sub-divisional laboratory Ghumarwin.**

**** Sub-divisional laboratory is under Jal Shakti Division Tissa. The water samples of JSD Salooni were tested in sub-divisional laboratory Koti.**

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