Citizens' Charter for
Public Health Engineering Department Aizawl - 2018

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1. INTRODUCTION

Brief History of PHE Department

Prior to 1961 when Mizoram was one of the Districts under Assam, the organization of PHED was still so small that the Mizoram was looked after by a single Sectional office headed by a Sectional Officer/Junior Engineer functioning under the jurisdiction of Karimganj PHE Sub-Division. The achievements and the activities of the PHED were very less and was almost not perceived by the common public.

In the year 1961, the PHED had started survey and investigation for the Aizawl Water Supply Scheme with a proposal to pump water from Serlui 'A' River to Tuikhuahtlang, Then, in the year 1963, the Assam Government created Aizawl PHE Division with 2 (two) Sub-Divisions vide Order No. TAW/PW/26/60 Dated 2nd November, 1963 to look after the execution of the Aizawl Water Supply Scheme.

When Mizoram became the Union Territory in the year 1972, the Mizoram PHE Department was placed under the Mizoram PWD under the administration of Principal Engineer. Since then, the Government of Mizoram, in realizing the need for accelerating implementation of Water Supply and Sanitation program, had put on continuous effort to expand the PHE Department by creating new Investigation Division in 1975, and opening PHE Circle in 1980 with creation of another Division named as Aizawl Division No. II. With a view to further expanding the PHE Department's activities in the southern part of the State, the Investigation Division, along with its Sub-Divisions was transferred from Aizawl to Lunglei on 12th May, 1979 and renamed as Lunglei Division.

The PHE Department was finally bifurcated from the parent PWD in the year August 1983 to become an independent entity with Superintending Engineer as Head of Department and four Working Divisions, viz- Aizawl Division I, Aizawl Division II, Lunglei Division and Lawngtlai Division.

With the ever expanding work programs on provision of Safe Drinking Water Supply and Safe Sanitation in both Urban and Rural Areas, the Department also expands proportionately with its establishment spreading along the length and breadth of the State.

2. VISION, MISSION, OBJECTIVES AND FUNCTIONS OF PUBLIC HEALTH ENGINEERING DEPARTMENT

Vision : Ensuring safe drinking water and improved sanitation for all, at all times, in Mizoram

Mission : To ensure all rural and urban households have access to and use safe drinking water and sanitation facilities on sustainable basis so as to bring about a healthy environment, prosperity and better quality of life.

Objective:

1. Facilitate all rural households to have access to and use adequate safe drinking water.
2. Facilitate all urban population to have access to and use adequate safe drinking water.
3. Facilitate all rural households to have access to and use appropriate sanitation facilities.

4. Facilitate all urban population to have access to and use appropriate sewerage and drainage facilities.
5. Enabling rural communities to monitor and keep surveillance on their drinking water quality.
6. Ensuring sustainability of drinking water sources and systems.

3. FUNCTION AND BRIEF RESUME OF THE DEPARTMENT:

In a broad sense, the PHE Department is entrusted with Drinking Water Supply, Sanitation and allied activities. The details of business allocated to the Department, as per the Government of Mizoram (Allocation of Business) Rules, 2015 are:

(1) Administration of Public Health, Sanitation and Water Supply.

(2) Integrated Management and Development of Drinking water resources.

(3) Management and Implementation of urban and rural Water Supply, Ground Water Development, Survey and Distribution.

(4) Protection, Renovation, Restoration and Repair of all Water Bodies.

(5) Water Quality Assessment, Monitoring and Surveillance.

(6) Liquid Waste Management such as Drainage, Sewerage and Septage, etc., in Rural and Urban Areas.

Till the 10th Plan period, the activities of PHED were largely limited to the water supply sector in both rural and urban areas with Rural Sanitation taken up in small scale under Central Rural Sanitation Programme. At last one or another type of water supply system had been provided in almost each and every village of Mizoram and, some Urban Water Supply had also been implemented. However, the rate of water supply as stipulated in the Government of India norms for rural villages and urban towns are still far to be met and there still is vast scope of improvement wide open. Moreover, depleting water sources is a major concern to the Department. There have been so many cases of slipping back of water supply levels. Providing water supply in a sustainable manner has become a major issue.

Water quality monitoring and surveillance is also one of the most important tasks of the Department. Constant water quality monitoring and surveillance is a basic necessity for ensuring supply of safe drinking water. The Department, with the help of Ministry of Drinking Water and Sanitation, Government of India, have set up State Referral Institute at Aizawl and Water Testing laboratory in all Sub-Divisional levels to constantly monitor the quality of water being supplied to the people.

In respect of Rural Sanitation, the implementation was taken up in a small scale under 'Central Rural Sanitation Program' till the end of 10th Plan period. From the year 2003-04, with the launching of Total Sanitation Campaign Programme (TSC) by Government of India, implementation of Rural Sanitation Program had picked up in a much larger scale. The total sanitation campaign programme mainly

concentrates on provision of safe sanitary latrines in rural houses, construction of community toilets and school toilets through demand driven approach combined with massive awareness creation on importance of safe sanitary practices and personal cleanliness for imparting personal and community health. From 2nd October 2014, the Government of India again launched Swatch Bharat Mission-Gramin by making few changes in the scope of activities covered under Total Sanitation Campaign like construction of Sanitary Toilets for Schools and Anganwadi which has been excluded and transferred to the concerned ministries.

Information, Education and Communication (IEC) is also an important task of the Department. Lack of awareness on the need for safe drinking water and safe sanitation practice is still eminent among the large masses of people, especially in the rural areas. People must be educated about the importance of safe drinking water and safe sanitation practices.

In respect of Urban Sanitation, the Department proposes to implement Sewerage Project in the Capital Aizawl and the Detailed Project Report has been submitted to Ministry of urban Development, Govt. of India, New Delhi. Preparation of Project Report for Sewerage Scheme at Lunglei, the second Capital is now under process. As a policy of the State Government, Sewerage and drainage facilities have to be implemented in all the 8 District capitals. However, the Department plans to provide at least the Storm Drainage System in all the 22 Census towns with a view of mitigating the land slide problems which is a very common phenomena caused by heavy rainfall during monsoon seasons.

In view of the grave need for systematic management of water resources and the need for entrusting the same to a particular Department, the Govt. of Mizoram has recently allocated the business of Water Resources management to PHED. The entire State being hilly areas and the structure of the underlying rock being alternate layers of porous sandstone and non-porous shale beds, the ground water prospect seems not very good. The most appropriate option for water conservation seems to be slowing down the runoff flow by way of construction of appropriate water retaining structures and conservation of forests in the upland catchment areas. The Department has initiated conservation and reforesting of catchment areas in collaboration with some NGOs and at the sametime. IEC progams have been undertaken side by side to impart awareness to the common public. The water resources management program need to be launched in a large scale for mitigation of ever declining water resources so that at least the minimum water requirement for various water uses can be met at all times.

4. ORGANIZATIONAL SET-UP

As of now, the Department becomes amongst the top Major Department in Mizoram having the following Engineering and Technical Staff:

i. Engineer-in-Chief- Grade-1 'A'
(Super time Scale) - **1 no.** as the Head of Department.

ii. Chief Engineers- Grade - 1 'B'
(Super time Scale) - **3 nos**.

iii. Superintending Engineers/Director CCDU/Joint Secretary-Selection Grade - **9 nos**.

iv Executive Engineer
(a) Sr. Grade (JAG) - **18 nos**.

(b) Jr. Grade (JAG) - **10 nos**.
(c) Under Secretary - **1no**.
(d) State Co-ordinator - **1 no.**
(e) SIPMIU - **1 no.**
Total : **29 nos.**

v. Assistant Engineers/Sub-Divisional Officers
(a) Senior Grade - **14 nos.**
(b) Junior Grade - **54 nos.**

vi Hydrogeologist - **1 no.**

vii Asst. Hydrogeologist - **1 no.**

viii. Junior Engineers - **136 nos**.

The organization Chart of the Department is appended at page no 57.

5. WATER SUPPLY SYSTEM IN MIZORAM

(a) Rural Water Supply :

Prior to 1972 the Government of India did not take much initiative in assisting drinking water supply programme in the rural areas and the same had been taken up from the State's own resources in a small scale. With the launch of Accelerated Rural water Supply Programme (ARWSP) in the year 1972, The Government of India started playing effective role in the rural drinking water supply sector with the major thrust of ensuring provision of adequate drinking water supply to the rural community through the Public Health Engineering System. Since then, implementation of rural drinking water supply picked up with the help of funding from the Government of India.

In the year 1991 the programme was renamed as Rajiv Gandhi National Drinking Water mission with additional stress on water quality, appropriate technology intervention, human resources

development, support and other related activities. In the year 1999, the Government of India had further introduced Sector reform Project that stressed upon involvement of community in planning, implementation and management of drinking water related schemes.

The Rural Water Supply (RWS) sector, in the present phase, emphasizes on ensuring sustainability of water availability in terms of portability, adequacy, convenience, affordability and equity while also adopting decentralized approach involving PRIs and community organizations. Adequate flexibility is afforded to the State / UTs to incorporate the principles of decentralized, demand driven, area specified strategy taking into account all aspects of the sustainability of the sources, system, finance and management of the drinking water supply infrastructure. Adoption of appropriate technology, revival of tradition systems, conjunctive use of surface and ground water, conservation, rain water harvesting and recharging of drinking water sources have been emphasized in the new approach. In the RWS sector sustainability of drinking water sources and system are major issues. As a consequence, ensuring availability of drinking water both in terms of adequacy and quality, on sustainable basis, is the major challenge.

Water quality is impacted due to rising levels of man made chemical pollutants such as pesticides and insecticides. The biological contamination of large number of drinking water sources is serious problem, primarily due to prevalent open defecation and insanitary conditions around the drinking water sources especially in rural villages. With the basic sanitation programme being implemented in the villages, the prevalence of water borne diseases such as diarrhea, cholera, etc. is being seen to have decreased but the incidence is still relevantly high in some parts of the State.

The National Goal in rural water supply is "To provide every rural person with adequate safe water for drinking, cooking and other domestic basic needs on a sustainable basis. The basic requirement should meet minimum water quality standards and be readily and conveniently accessible at all times and in all solutions".

In terms of adequacy, the Government of India set the following minimum water supply level (As per 40 lpcd & 55 lpcd) in rural areas:

Sl.No	Purpose	Quantity (LPCD)	
1	Drinking	3	3
2	Cooking	5	5
3	Bathing	15	15
4	Washing utensil and house	7	10
5	Ablution	10	10
6	Washing clothes and other uses		12
	Total :	40	55

In terms of safety, water is defined as safe if it is free from biological contamination (guinea worm, cholera, typhoid etc) and within permissible limits of chemical contamination (excess fluoride, briskness, iron arsenic, nitrates etc)as per IS-10500 standard of BIS.

STANDARD OF WATER QUALITY- IS-10500 (2012)

Sl. No	Parameters	Unit	BIS (IS:10500)-2012		WHO Desirable Limits
			Desirable Limits	Max. Permissible Limits	
1	pH	-	6.5-8.5	6.5-8.5	6.5-9.2
2	Arsenic	Mg/L	0.01	0.05	0.01
3	Fluoride	Mg/L	1	1.5	1.5
4	E-Coli	Number	Absent	Absent	Absent
5	TDS	Mg/L	500	2000	1200
6	Nitrate	Mg/L	45	45	50
7	Iron	Mg/L	0.3	0.3	0.3
8	Calcium (as Ca)	Mg/L	75	200	No Specification
9	Magnesium (as Mg)	Mg/L	30	100	No Specification
10	Sulphate	Mg/L	200	400	500
11	Alkalinity	Mg/L	200	600	No Specification
12	Turbidity	NTU	1	5	10

Rural Water Supply has been done by the following Systems:

i) Gravity Feed System: The piped water supply system is generally a simple gravity system in rural areas with an intake structure. The system comprises of conveyance main, storage reservoir, distribution network, House Water Connection and several tap stands to the consumers end. Water is collected from the perennial river which is usually located at a great distance from village.

ii) Pumping System: Lifting water from the source of natural rivers through high lift pump driven by power from external source i.e. electricity, diesel engine and solar power to supply water to the treatment works and then to the storage reservoir. The location of reservoir is selected at the higher elevation from where water is distributed to the consumers by gravitation.There are about 34 Nos of pumping schemes in rural habitations in Mizoram.

iii) Rain Water Harvesting: Mizoram receives rainfall in abundant and it rains from May to September. An average annual rainfall is about 250 cm and it receives rainfall around 130 days in a year. The present system of traditional rain water harvesting practices is a version of the roof top rain water harvesting model. The PHED, Government of Mizoram has taken up its rainwater harvesting scheme under the mini-mission and other programmes of the Centrally Sponsored Schemes. This scheme was implemented in the villages in the absence of other sources that could supply water by gravity flow. The system of construction is based on 10 lpcd at water supply level of 6 members per family for 120 days of dry period and the capacity of storage tank of mild steel sheet

worked out at a capacity of 7500 liters and now this practice had been stopped. This traditional water harvesting system is based on sound principles. However, improvement by way of incorporating modern technology and scientific inputs would transform it into even more efficient system towards solving the problems of drinking water in rural areas. The department is introducing impounding rain water at suitable natural depression by constructing stone masonry and/ or RCC dams and the stored rainwater in the impounding reservoir is being utilized mainly for the purpose of ground water recharging and drinking water supply. Nowadays, the department is constructing RCC Reservoirs of suitable capacity to store rain water from rains as well as from gravity piped water supply during monsoon with a provision of treatment unit for drinking water supply during dry period, when the water source is not sufficient to meet the demand of water for drinking purposes, etc.

iv) Hand Pump TubeWells(Ground Water): The ground water exploration and extraction is being conducted by PHED, Government of Mizoram since 1987 by using drilling rig mounted on a truck. Bores are drilled up to an average 35m depth and Indian Mark-II&III installed for lifting ground water from the bore hole. The record reveals that 2500 nos. of bore holes were drilled so far out of which 2150 nos. of bore holes are successful and fitted with hand pump. It is very useful and important in the field of water supply system in Mizoram and having significant contribution to water supply level.

However, it could be assumed through field investigation and observation that bore holes, wells drilled and construction of hand pump in Mizoram were shallow tube wells mainly controlled by localized potential with secondary

structure possessing of independent parameters. Therefore, it is very difficult to arrive at any relevant conclusion regarding the nature and thickness of aquifers, depth to the ground water table, yield etc. So it can be understood that any formation that can be tapped in hilly region like Mizoram is bound to produce only limited yields, yet sufficient to supplementing drinking water supply. (The discharge of 1 HPTW is taken as 4 lpm and for 4 hrs. pumping a day, 960 lts. per day has been taken as the contribution of 1 HPTW)

Submersible electric motor pumps were also fitted and installed at those Hand pump Tube Wells, where Ground Water discharges are sufficient and power supply is available to substitute Hand pumps. There are 65 nos. of submersible pump and 854 nos. of Hand pumps installed within Mizoram as on 1.4.2018.

As of now, due to collapse of Borehole, and due to dry up of underground water, etc, 651 nos are functioned and 203 are not functioned out of 854 Hand pumps as recorded on 1.4.2018. *(page no.44)*

BRIEF GROUND WATER LEVEL DATA IN MIZORAM AND GROUND WATER ANALYSIS

Sl. No.	District	Lowest range (in meter)	Highest range (in meter)	Common range (in meter)
1	Aizawl	6.58	21.19	10.12
2	Kolasib	6.81	15.74	12.63
3	Mamit	2.1	11.94	7.43
4	Champhai	5	18.41	11.69
5	**Lunglei**	**14.53**	**24.9**	**16.66**
6	Lawngtlai	20.42	30.46	24
7	Serchhip	8.56	13.89	10.83
8	Saiha			
		Lowest range	**Highest range**	**Common range**
1	pH	4.9	8.4	6.8
2	Electrical Conductivity	174µs/cm	1756µs/cm	200-300µ/cm
3	Alkalinity	0/mg	860 mg/l	100-150 mg/l
4	Turbidity	05.NTU	91.0 NTU	1.0 NTU
5	Chloride	0 mg/l	300.0 mg/l	30-50 mg/l
6	Hardness	Trace	500 mg/l	100-150 mg/l
7	Iron	0 mg/l	20 mg/l	0.3-0.5 mg/l

v) Improved Villages Spring Source (IVSS/ Tuikhur): The improvement and development of spring source nearby or within villages being undertaken by the State PHED. The system of construction of RCC or stone masonry structure in rectangular shape with GCI roofing, it is quite useful during dry season in supplementing water supply level in rural areas.

vi) Emergency Water Supply by Truck: Mizoram is a mountainous region with a narrow strip of plain along the river basin. During monsoon season, Mizoram has a good rainfall. However, during the dry season our water supply sources got easily dried up as the yield decreases resulting in severe drinking water scarcity at different towns and villages. Due to this Emergency Water Supply by Truck has been carried out during dry period in those severely affected habitations every year.

In the past, drinking water supply in rural areas in Mizoram had been outside the Government sphere of influence, the community managed Improved Village Spring Source (IVSS/ Tuikhur), private wells and Individual Rain Water Harvesting System have often been main traditional sources of rural drinking water, the first government installed rural water supply schemes were implemented in the 1950s as part of the Government's policy to provide basic drinking water supply facilities to the rural population. Since then, the involvement of Government has increased with corresponding decrease in the role of communities in the rural water supply sector. The Government of India's role in the rural drinking water supply sector started in 1972-1973 with the launch of Accelerated Rural Water Supply Programme (ARWSP) to assist the States for providing portable water to the rural population.

The Rural Water Supply (RWS) sector has now entered the fourth generation with major emphasis on ensuring sustainability of water availability, adequacy, convenience, affordability and equity by adopting decentralized approach involving Village WATSAN Committee and the community. The

approach and objectives is to ensure drinking water to all population on a sustainable basis and in the principles of decentralized, demand driven. Adoption of appropriate technology revival of traditional systems, conjunctive use of surface and ground water, conservation, rain water harvesting and recharging of drinking water sources have been given major emphasis in the new approach.

During 1972-1986, the main objects of RWS was to provide adequate drinking water to rural community through a centralized PHED. The second generation, another programme was started by introducing Technology Mission (1986-1987) and later renamed RGNDWM (1991-1992). The third generation Sector Reform Project was launched during 1999-2000 and the principles were to involve Community in planning, implementation and management of RWS schemes later scaled up as Swajaldhara in 2002.

In our Country, women generally manage domestic water and an essential ingredient of community participation is improve women's involvement, since women are the principal beneficiaries of this programme and is the pivot around which the entire sustainability paradigm is evolved. The level of service should be linked to the issue of demand, commonly expressed through user willingness-to-pay for a particular level of service and their satisfaction. Coverage of a particular village should be indicated based on these criteria. However, the issue of equity and the basic minimum need concept should be kept in mind while designing the schemes. Based on these, consideration the ARWSP has been modified as National Rural Drinking Water Programme (NRDWP) for the 11th Plan period.

The NRDWP is to meet the Rural Drinking Water Supply and to ensure the water availability, sustainability and quality. The different components of NRDWP, purpose, distribution and the central state sharing pattern are as follows:

Component	Purpose	Distribution of State NRDWP allocation	Central-State sharing
Coverage	For providing safe and adequate drinking water supply to un-served, partially served and slipped back habitations	47%	90:10 (for NE States and J&K) 50:50 (for other States)
Quality	To provide safe drinking water to water quality affected habitations.	20%	
O & M	For expenditure on running, repair and replacement costs of drinking water supply projects.	15% Maximum	
Sustainability	To encourage States to achieve drinking water security at the local through sustainability of sources and systems	10% Maximum	100:00:00
Support	Support activities like WSS, DWSM, BRCs, IEC, HRD, MIS and computerization, R&D etc.	5%	100:00:00
Water Quality Monitoring & Surveillance	For monitoring and surveillance of water quality in habitations at field level and for setting up, up-gradation of laboratories at State, District and Sub-Divisional levels	3%	100:00:00
Total :		**100%**	

Therefore, Mizoram may have the programme fund available for different component as follows:-

1) 15 % for O & M.
2) 10 % for Sustainability measures.
3) 5 % for Support Activities.
4) 3% for WQM&SP
5) 57 % for Coverage and Quality
6) 10% for flexi fund

The Government of India has taken a policy to provide 40 liters per capita per day of drinking water to all the rural habitations which was adhered to since inception of ARWSP(1972) in the State and a minimum level should be 55 lpcd in Twelfth Five Year Plan period. The vision for rural domestic water supply in the strategic Plan (by 2022) of the Ministry is to cover all rural households with safe piped drinking water supply @ 70 lpcd.

The Rural Water Supply is the responsibility of the State Water Supply and Sanitation Mission (SWSM) and all the Rural Water Supply Schemes are being executed through the SWSM and PHED as the implementing agency.Under SWSM,State level Technical Agency(STA) comprising of technical expert to examine the projects before submitted to State level Scheme Sanctioning Committee(SLSSC) for approval. The schemes which are approved by SLSSC, and after sanctioned by State Government are implemented and handed over to Village Water & Sanitation Committee (VWSC) for further operation and maintenance,except some pumping schemes which are maintained by PHED.

DISTRICT WISE COVERAGE STATUS OF RURAL HABITATION IN MIZORAM

Apart from NRDWP fund, many rural habitations have been covered under various programmes such as NLCPR, NEC,SPA,NABARD in order to achieve norms of water supply level as well as for improvement of existing water supply scheme. As per IMIS, Ministry of Drinking Water & Sanitation(after data realignment),the Coverage Status of Rural Habitation as per 40 lpcd & 55 lpcd as on 1.4.2017 are as follows:

Sl No.	District	Total Habitations	Population Coverage as per 40 LPCD					
			Partially Covered					Fully Covered (FC)
			0 - 25	25 - 50	50 - 75	75-100	Total	
1	Aizawl	108	3	6	9	11	29	79
2	Champhai	84	0	6	11	20	37	47
3	Kolasib	32	1	2	2	2	7	25
4	Lawngtlai	168	24	20	20	20	84	84
5	Lunglei	169	1	7	14	29	51	118
6	Mamit	90	9	6	4	11	30	60
7	Saiha	53	0	1	1	2	4	49
8	Serchhip	34	1	5	6	4	16	18
Total		738	39	53	67	99	258	480

Sl No.	District	Total Habitations	Population Coverage as per 55 LPCD					
			Partially Covered					Fully Covered (FC)
			0 - 25	25 - 50	50 - 75	75-100	Total	
1	Aizawl	108	5	12	45	26	88	20
2	Champhai	84	0	14	37	22	73	11
3	Kolasib	32	2	3	12	7	24	8
4	Lawngtlai	168	32	29	35	33	129	39
5	Lunglei	169	6	12	60	39	117	52
6	Mamit	90	11	7	44	14	76	14
7	Saiha	53	1	1	3	34	39	14
8	Serchhip	34	4	8	7	4	23	11
Total		738	61	86	243	179	569	169

b) *Drinking Water Quality Monitoring and Surveillance Programme:*

PHE Department, Government of Mizoram is currently undertaking the National Rural Drinking Water Quality Monitoring and Surveillance Programme (NRDWQM & SP) launched in February 2005 has now been merged with NRDWP sponsored by Government of India. The existing water quality testing laboratories are as follows:

1) State Referral Institute and State Public Health Laboratory at Aizawl headed by Chief Chemist.
2) There are 8 nos. of District Laboratories at every District Headquarters and 18 nos. of Sub-Divisional Laboratories at the following places:-

State Laboratory:-

1. State Referral Institute, Aizawl.

District Laboratories: -

1. Aizawl 2. Lunglei 3. Kolasib 4. Champhai
5. Saiha 6. Lawngtlai 7. Mamit 8. Serchhip

Sub-Divisional Laboratories:-

1. Darlawn 2. Sakawrdai 3. Hnahthial
4. Thenhlum 5. Tlabung 6. Tuipang
7. Sangau 8. Chawngte 9. Bungtlang'S
10. Vairengte 11. Khawzawl 12. Ngopa
13. Khawbung 'S 14. Zawlnuam 15. W.Phaileng
16. Thenzawl 17. E.Lungdar 18. Saitual

c) *Support Activities:*
Communication & Capacity Development Unit (CCDU)

CCDU is a proposal made by the Government of India for promoting the reform initiatives introduced in water supply and sanitation sector. It encourages Community participation in the planning, implementation, operation and maintenance in water supply and sanitation schemes, of its preference and affordability. The main objectives of the CCDU are : to develop State specific information, education and communication strategy for reform initiatives in water and sanitation sector and to provide capacity development of functionaries at all levels.

The broad objectives of CCDU:

1. Develop state specific information, education and communication strategy for reform initiatives in water and sanitation.
2. Provide capacity development of functionaries at all levels.
3. Address the need of sustainability in water and sanitation.
4. Promote new technologies which may be taken up under NRDWP and other Rural Water Supply Programme and Swachh Bharat Mission.
5. Take up advocacy on conventional and traditional water conservation and rain water harvesting.
6. Undertake action research on various aspects of sanitation including new technologies, impact of provision of sanitation facilities on health indicators, IEC strategies etc.

Activities and achievements:

1. Conduct Training Needs Assessment for Water and Sanitation.
2. Prepare Capacity Building Plan for PRI members, VWSC members and Engineering/Technical Staff.
3. Identify Key Resources Centre at State and District/ Regional Level.
4. Take up training programme through National, State and District Resource Centres and through in-house resource persons.

5. Prepare Annual IEC plan based on communication strategy for water and sanitation sectors.
6. Create awareness amongst the community and stakeholders.
7. Knowledge, attitude and Practices (KAP) study within the Department and at District level, and assessment.
8. Documenting success story on water and sanitation sector.
9. Conducting various competition such as slogan, article and essay writing, composed song writing, photo, audio visuals, etc. on water and sanitation to create awareness among the public.
10. Organised 'Tuihna Humhalh' inter Branch YMA Drama Competition 2014 which was a huge success.
11. Observed World Water Day each year since 22nd March 2012.
12. Conducted water and sanitation awareness week 2012.

The Swachh Bharat Mission was launched successfully on 2nd October 2014 at State and District Level.

Apart from NRDWP fund, many rural habitations have been covered under various programmes such as NLCPR, NEC, SPA, NABARD in order to achieve norms of water supply level as well as for improvement of existing water supply scheme as follows:

SOME MAJOR ON-GOING RURAL WATER SUPPLY SCHEMES.

Rupees in lakh

Sl No	Name of Project/ Scheme	Approved cost (lakh)	Achievement upto	
			Physical	Financial
	FUNDING - NLCPR			
1	S. Khawbung (Pumping) WSS	827.38	91%	755.91
2	Water Supply to Sainkik School, Chhingchhip WSS	787.00	-	1.41
3	Const. of Dam Reservoir, Keilungliah	1988.00	-	-
	FUNDING - NEC			
4	Bualpui NG & Lungzarhtum WSS	493.00	90%	441.56
5	Sangau WSS (Pumping) Ph-II	471.6	95%	457.78
	FUNDING - NABARD			
6	Sialsuk and Samlukhai WSS	300.00	90.69%	246.829
7	Leite -Rotlang WSS	208.20	53.64%	158.327
8	N. Thingdawl	520.00	31.66%	187.2
9	Phullen & Thanglailung WSS	1400.00		
10	Sailam Pumping (Aug)WSS	259.62		
11	Vanbawng WSS (Solar Pumping Scheme)	214.10		
12	Combined Solar Puming Scheme (Rulkual, R. Vanhne,Paithar & Saikah)	1104.40		
13	Combined Solar Puming Scheme of Chiahpui, NE. Khawdungsei, Khawkawn	942.38		
14	Combined Mimbung & Hrianghmun WSS (Solar Pumping Scheme)	1137.90		

(d) Urban Water Supply:

Mizoram has 1 city and 22 Census Towns. With the continuous effort of the Department in providing water supply in urban towns much achievement have already been made. So far, fully covered status (70Lpcd) have been achieved in 14Towns. Out of the remaining 9 towns, efforts has been made to achieve Norms for water supply Level which is 70 lpcd (135 lpcd where Sewerage system is contemplated) by preparing DPR as well as by constructing/augmenting existing Water Supply Schemes by pulling funds under various programme from Government of India. It is expected that all balance uncovered Towns will be fully covered under Government of India Programme like AMRUT, NLCPR, NEC and 10% GBS, EAP. As on 31st March 2017, about 81,586 nos. of house water connections was provided in these city and urban towns. The programme are still underway to improve the level of water supply in quantity including reduction of non-revenue water(NRW) and quality. It is expected that all the towns would be fully covered by the end of 2020 AD.

The break-up of minimum water requirement for human consumption Set by the Government of India in Urban Water Supply without and with Sewerage scheme are as under:

Sl.No	Purpose	Quantity(Lpcd)	
1	Bathing	20	55
2	Washing of Clothes		20
3	Flushing of W/C	15	30
4	Ablution	15	
5	Washing of House & Utensils	12	
6	Washing of House		10
7	Washing of Utensils		10
8	Cooking	5	5
9	Drinking	3	5
	TOTAL :	**70**	**135**

POSSITION OF URBAN WATER SUPPLY.

Sl No	Town/City	Population(2011)	LPCD	Capacity in MLD	Nos of HWC 1.4.18
1	Aizawl (City)	293416	70	34.80	50,880
2	Champhai	32734	51	4.00	4,567
3	Hnahthial	7187	77	1.18	1,284
4	Khawzawl	11022	20	0.39	1,650
5	Saitual	11616	40	3.00	1,166
6	Khawhai	2496	16	0.025	4
7	Kolasib	24272	51	1.72	3,803
8	Vairengte	10554	70	0.74	953
9	N. Kawnpui	7732	70	0.60	880
10	Bairabi	4320	70	0.42	263
11	Lawngtlai	20830	40	1.81	1,667
12	Lunglei	57011	40	9.00	10,933
13	Mamit	7884	45	0.64	1,223
14	Zawlnuam	3733	38	0.11	237
15	Sairang	5950	40	0.60	402
16	Darlawn	3769	48	0.35	487
17	Lengpui	3282	70	0.79	396
18	Tlabung	4554	73	0.89	426
19	Saiha	25110	36	3.10	3,022
20	Serchhip	21158	70	2.64	3,421
21	Thenzawl	7259	50	0.50	663
22	N.Vanlaiphai	3602	11	0.05	4
23	Biate	2277	5	0.011	-

For achieving water supply Norms i.e 70 Lpcd (135 Lpcd where Sewerage System is contemplated/existed), various projects have been taken up and proposed to be taken up under different programme/funding source as follows:

MAJOR ON-GOING SCHEMES IN URBAN WATER SUPPLY

Sl No	Name of Project/ Scheme	Approved cost	Achievement upto June 2018	
			Physical	Financial
	FUNDING - 10% LUMPSUM GRANT/GBS			
1	Greater Khawzawl (Pumping) WSS	2497.00	65.48%	336.73
2	Biate (Pumping) WSS	1364.67	39.38%	409.4
	FUNDING - NEC			
3	Vairengte (Pumping) WSS	783.11	88%	783.11

6. SANITATION:

i) Rural Sanitation : In the National level, the rural sanitation program was introduced in the year 1954. Still, the 1981 cencus revealed that rural sanitation coverage was only 1%. Since then the need for pacing up the implementation of rural sanitation programme has been realized. The Government of India therefore introduced the central Rural sanitation programme (CRSP) in 1986 primarily with the objective of improving the quality of life of the rural people and also to provide privacy and dignity to women. Under the CRSP numbers of sanitary latrines was constructed in many villages across the country. However, study of the impact of CRSP implementation reveals that numbers of sanitary latrines so constructed were lying unused and large numbers of people still continue their old practice of open defecation. It has therefore been realized the need of awareness creation for successful implementation of sanitation program.

In the year 1999, "Total sanitation Campaign(TSC)", was launched which is a "demand driven" approach and emphasizing more on Information, Education and Communication (IEC), Human Resource Development (HRD), Capacity Development activities to increase awareness among the rural people and generation of demand for sanitary facilities. This enhanced people's capacity to choose appropriate options through alternate delivery mechanisms as per their economic condition. Financial incentives were provided to below Poverty Line (BPL) household for achievements. To generate awareness on sanitation, the Nirmal Gram Puraskars (NGP) were awarded to recognized the achievements and efforts made at the GP level in ensuring full sanitation coverage and achieving other indicators of open defecation free GPs. While the award gained popularity in bringing about a desired in the community for attaining Nirmal Status, ther have been issued of sustainability in some awardee GPs.

The "Nirmal Bharat Abhiyan" (NBA) the successor programme of the TSC, was lunched from 1.4.2012. The objective was to accelerate the sanitation coverage in the rural areas so as to comprehensively cover rural community through renewed strategies and saturation approach. Under NBA, the Incentives for IHHLs were enhanced and further focused support was obtained from MNREGA. However there were implementation difficulties in convergence of NBA with MNREGA as funding from different sources created delays.

To accelerate the efforts to achieve universal sanitation coverage and to put focus on sanitation, the Prime Minister of India launched the Swachh Bharat Mission on 2nd October, 2014 which aims to achieve Swachh Bharat by 2019, as a fitting tribute to the 150th Birth Anniversary of Mahatma Gandhi, which in rural areas shall mean improving the levels of cleanliness in rural areas through Solid and liquid waste management activities and making gram Panchayats Open Defecation Free (ODF), clean and sanitized.

Individual health and hygiene largely depend on adequate availability of drinking water and proper sanitation. There is, therefore, a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation and lack of personal and food hygiene have been major causes of many diseases in developing country. A scheme called 'Total Sanitation Campaign' (TSC) was introduced by the Government of India during 2003-2004 and the entire state is being covered under this programme till 31st march 2012. TSC has been renamed as Nirmal Bharat Abhyan(NBA) with effect from 1.4.2012 and construction of sanitary toilets for Schools and Aganwadis are sliced out from this programme and renamed as "Swatch Bharat Mission-Gramin(SBM-G)", which was launched by Hon'ble Prime Minister on 2nd oct 2014.The main goal is to achieve "Swachh Bharat by 2019"

Main objectives of Swachh Bharat Mission-SBM-Gramin are:

1) To bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness hygiene and eliminating open defecation.
2) To accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by 2nd October 2019.
3) To motivate Community and Village Councils to adopt sustainable sanitation practices and facilities through awareness creation and health education.
4) To develope wherever required community managed sanitation systems focussing on scientific solid and liquid waste management systems for overall cleanliness in the rural areas.
5) Encourage cost effective and appropriate technological for ecologically safe and sustainable sanitation.

SWACHH BHARAT MISSION : COMPONENT- WISE EARMARKING AND FUNDING PATTERN:

Sl. No	Component	Amount earmarked as % of SBM(G) Project Outlay.	Contribution Share		
			GOI	State	Beneficiary
a.	I.E.C, Startup activities& Capacity Building.	Up-to 8% of total project cost, with 3% to be utilized at the central level and 5% at state level.	75%	25%	0%
b.	Revolving fund	Up-to 5%	80%	20%	0%
c.	IHHL (N.E States)	Actual amount required for full coverage.	10800 (90%)	1200 (10%)	0%
	CSC(N.E States)	Actual Amount required for full coverage.	60%	30%	10%
d.	Administrative charges	Up-to 2% of project cost.	75%	25%	0%
e.	Solid/Liquid Waste Management (Capital Cost)	Actual amount as per SLWM Project Cost within limits permitted.	75%	25%	0%

ACHIEVEMENT ON SWACHH BHARAT MISSION
(AS ON 31ST March, 2018)

Sl No	Components	Total	Remarks
1	IHHL for APL	28913	School & Anganwadi Toilets are sliced out from SBM(G) w.e.f. 2.10.2014
2	IHHL for BPL	96304	
3	Community Sanitary Complex (CSC)	609	
4	Solid & liquid Waste Management (SLWM)	108	

All District in Mizoram except Lunglei District has been declared as ODF District.

Nirmal Gram Puraskar (NGP): NGP is an incentive under Total Sanitation Campaign given to Village Council, which have complete sanitation coverage.

Objective of NGP:

i. To bring the topic of Sanitation to the forefront of Social and Political development in rural areas.

ii. To develop open defecation free and clean villages.

iii. To increase Social Mobilization in Total Sanitation Campaign implementation and to give incentive to Village Council to sustain the initiatives taken by them to eliminate the practice of open defecation.

The award of NGP has been distributed to awardees every year, some of the Village Councils (VC) in Mizoram also received NGP award as follows:

LIST OF NGPA WARDEES

S.No	Village	District	Year
1	Rawpui	Lunglei	2007
2	Baktawng	Serchhip	2007
3	Ngentiang	Champhai	2007
4	Ailawng	Mamit	2008
5	Rawpuichhip	Mamit	2008
6	Phulpui	Aizawl	2008
7	Seling	Aizawl	2008
8	Tlangnuam	Aizawl	2008
9	Thingsulthliah	Aizawl	2008
10	Bulfekzawl	Champhai	2008
11	Chhiahtlang	Serchhip	2008
12	Hmunnghak	Aizawl	2009
13	Sailutar	Aizawl	2009
14	Puilo	Champhai	2009
15	Ngopa	Champhai	2009
16	Bilkhawthlir N	Kolasib	2009
17	N. Chhimluang	Kolasib	2009
18	Pangzawl	Lunglei	2009
19	Collegeveng	Lunglei	2009
20	Farm Veng	Lunglei	2009
21	Haulawng	Lunglei	2009
22	Hrangchalkawn	Lunglei	2009
23	Mualthuam 'N'	Lunglei	2009
24	Ralvawng	Lunglei	2009
25	Ramthar	Lunglei	2009
26	Tawipui 'N'- I	Lunglei	2009
27	Theiriat	Lunglei	2009
28	Zohnuai	Lunglei	2009
29	Mamit Bazar Veng	Mamit	2009
30	East Lungdar	Serchhip	2009
31	Buhkangkawn	Serchhip	2009
32	Phulmawi	Aizawl	2010

33	Hliappui	Champhai	2010
34	Zawlnuam Thuampui	Mamit	2010
35	Lallen	Mamit	2010
36	Bawngthah	Mamit	2010
37	Chamring	Aizawl	2011
38	Sailam	Aizawl	2011
39	Thiak	Aizawl	2011
40	Ruallung	Aizawl	2011
41	Rulchawm	Aizawl	2011
42	Ngur	Champhai	2011
43	Vapar	Champhai	2011
44	Chawngtui 'E'	Champhai	2011
45	Chhawrtui	Champhai	2011
46	Kolasib II	Kolasib	2011
47	Bukpui	Kolasib	2011
48	Hortoki	Kolasib	2011
49	N.Hlimen	Kolasib	2011
50	Chawntlangpui	Lawngtlai	2011
51	N.Khawlek	Lunglei	2011
52	S.Lungdai	Lunglei	2011
53	Serte	Lunglei	2011
54	Sertlangpui	Lunglei	2011
55	Tleu	Lunglei	2011
56	Lungleng 'S'	Lunglei	2011
57	Ngharchhip	Lunglei	2011
58	Rotlang	Lunglei	2011
59	S.Chawngtui	Lunglei	2011
60	Thiltlang	Lunglei	2011
61	Bualpui 'V'	Lunglei	2011
62	Lungpuizawl	Lunglei	2011
63	Pukpui	Lunglei	2011
64	Salem	Lunglei	2011
65	Thaizawl	Lunglei	2011

66	Thualthu	Lunglei	2011
67	Vanhne	Lunglei	2011
68	Rangte	Lunglei	2011
69	Bawlte	Mamit	2011
70	Chungtlang	Mamit	2011
71	Darlung	Mamit	2011
72	Lengpui	Mamit	2011
73	Reiek	Mamit	2011
74	Chhippui	Mamit	2011
75	Khawhnai	Mamit	2011
76	Dampui	Mamit	2011
77	Phaizau	Mamit	2011
78	Khopai	Saiha	2011
79	Niawhtlang	Saiha	2011
80	Leng	Serchhip	2011
81	Mualcheng	Serchhip	2011
82	N.Vanlaiphai	Serchhip	2011
83	Buangpui	Serchhip	2011
84	Chhingchhip 'V'	Serchhip	2011
85	Hmawngkawn	Serchhip	2011
86	Hmuntha	Serchhip	2011
87	Hmunzawl	Serchhip	2011
88	Hualtu	Serchhip	2011
89	Khawbel	Serchhip	2011

ii) Urban Sanitation:

Activities like Sewerage and Sanitation, Storm Drainage and Land-slip Protection and Liquid Waste Management System could not be taken up in large scale due to limitation of fund under State Plan during 10th & 11th Five Year Plan periods. However, at least some of the Schemes are expected to implement in the city and towns of Mizoram during 12th Plan period.

The department envisions the following facilities to be provided in the Cities and Towns:

a) Sewerage & Drainage System: At the National Level, the Government of India adopts a policy of Sewerage System in all State Capitals. With this in view, the Department envisions implementation of Sewerage System in Aizawl City. DPR has been formulated and the same has been submitted to Government of India for approval and funding. In the meantime, the UD&PA, Government of Mizoram is also planning to implement Sewerage Scheme for limited area in the central part of Aizawl City. In respect of Storm Drainage System, since 2010-2015, the department has implemented the scheme in scattered matter on as in where needed basis with very limited funds. The department now considers formulating a Master Plan for the entire Aizawl City which shall be implemented in a phased manner.

Detailed Project Report(DPR) for Sewerage and Drainage System for Lunglei Town is under preparation by engaging consultancy services and is expected to be completed soon.

b) Liquid Waste Management System: Implementation of Sewerage System being limited to State Capitals only, the Department considers the need for implementation of alternative Liquid Waste management System in all other towns, which shall be of economical, easy to maintain, user – friendly and acceptable to the user. The department shall develop the project base on the study of trends, living standards and likings of the community of the individual towns.

c) Septage management system in all Towns: Septic tank is the most common practice of liquid and human waste disposal system being adopted across the State. The Department considers the need for evolving systematic and hygienic disposal of both the sludge and the effluent from the individual Septic Tanks.

d) ***Storm Drainage System in all Towns*** : Mizoram being hilly terrain with high rainfall, landslide disaster is very common phenomena which is attributable to improper management of runoff. With a view of both cleanliness and safety the department considers the need for having proper storm drainage system at least in all the towns.

PROJECTS TAKEN UP UNDER ATAL MISSION FOR REJUVENATION AND URBAN TRANSFORMATION (AMRUT)

1) Storm Water Drainage of Aizawl, Mizoram (Phase-I) - Rs. 25.956 crore.
2) Setting up of septage management unit including Anaerobic Microbial Inoculums(AMI) & Bio-digester facility at Aizawl -Rs. 4.056 crore.
3) Improvement of Aizawl Water Supply Scheme (Repalcement of Pumping Main of GAWSS-Phase I 6060m and Extention of Distribution lines-16645.3m) - Rs. 15.5 crore (Works Completed)
4) Reduction of Water Leakaged in the distribution system for Aizawl City - Rs. 4.056 crore (Works Completed)

PROJECTS TO BE TAKEN UP UNDER NEW ECONOMIC DEVELOPEMENT PROGRAMME (NEDP).

1) Construction & Improvement of various Water Supply Schemes - Rs 19.79 crore
2) Infrastructure Developement (O & M) - Rs 5.00 crore
3) Improvement of Aizawl City Drainage System - Rs 0.21 crore.

(Total of 1 - 3 is 25.00 crores.)

7. WATER RESOURCES MANAGEMENT:

Water Resources & Water use:

Water resources encompasses a vast subject with many entities within. Water resources in Mizoram:

1. Surface water i.e. rivers, lakes, streams.
2. Groundwater i.e/ springs (tuikhur)
3. Rainwater

Water Resources use given in order of priority as below:

1. Domestic/Drinking
2. Agricultural/Irrigation
3. Power generation
4. Industrial including agro-based industrial use
5. Navigation use
6. Recreational and other uses.

In spite of the absence of a Reliable Database we will all agree that Mizoram is already water stressed.

Rural Scenario at present:

Most of our rural water supply schemes are suffering from reduces yield and are becoming defunct. This source depletion could be attributed to rapid deforestation or climate change or it could be due to both factors. Many towns and villages have to resort to pumping schemes which are expensive in terms of capital cost as well as O&M cost.

Urban Scenario at present:

There is depleting water sources on one hand and increasing water demand on the other hand due to rising of income of the people and awareness of sanitation. Even in the urban areas where we have expensive pumping schemes, our water sources which are rivers have reducing yields which will soon have to be impounded to ensure water security by storing excess flow during rainy season.

Major efforts to be taken:

Project implementation is but only a small part of the overall strategy involving long term planning which is now absolutely essential due to the reasons below:

1. Adaption to climate change
2. Enhancing water available for use
3. Demand management and water use efficiency

Only way forward:

The only sustainable way to counter this would be to have an integrated approach to water resource development and management.

Any initiative in the water resource sector has to be multidisciplinary in its approach involving all stakeholders like water utilities, agriculture, horticulture, industry, power generation, navigation and recreation.

We need to have sustainable long term goals by giving due consideration to optimum utilization, environment sustainability and holistic benefit to the people. Major thrust are will now have to be conservation of rainwater when its available in all possible manner for impounding and recharge wherever feasible.

State water policy:

State water policy is to be drafted keeping in mind the basic principles and concerns reflected in the National Water Policy so as to arrive at a unified national perspective.

However, Mizoram being a mountainous region blessed with a high rainfall during monsoon period followed by a dry spell lasting for 6-7 months major focus will now have to be on water conservation.

Mizoram is entirely hilly region and the entire State is under the direct influence of monsoon receiving good rainfall of about 2400 mm per annum on an average. The Rainfall usually concentrates during the period of second half of may to the first half of October. Water is abundantly available during the monsoon period; however, once the effect of monsoon ceases, acute water scarcity follows which normally ranges from January to early May. In spite of the PHE Department's continuous efforts in giving sufficient water supply to many villages, the actual situation in the village levels are not very favourable. This is due to fact that the water sources are vulnerable which largely depend on performance of monsoon; a slight variation in rainfall or brief delay of monsoon would directly result in momentary water scarcity. Moreover, of late, there have been numerous reports on water supply status being slipping back from FC status to PC status due to depletion of yield of water sources. It has become a big challenge for the PHE Department to provide even the bare domestic water requirement in many rural villages in a sustainable manner. In some of the acute difficult villages and towns, the department even has to resort to supply drinking water by truck that is hauled several kilometers from downstream rivers incurring huge sums of money every year. The water scarcity equally hits the agriculture system as well. Many of the irrigation systems are not to supply sufficient water during dry periods and some fields have to be kept idle for want of water.

The ceaseless water scarcity and continuous depleting water resources that haunts Mizoram for so long can be attributable to the following reasons: i) The natural topography and geological formation of the landscape. The general geology of Mizoram is represented by a repetitive succession of neogene erinaceous and argillaceous sediments viz. sandstorm, siltstones, shale and rare pockets of shell lime stones. The successive alternative layers of non-porous siltstone in between the sandstone layers abstracts percolation of rainwater deep into the stable Groundwater level for effective recharge. Moreover, over 80% of geographical area of Mizoram comprises of long and steep gradient of hill slopes which encourage acceleration of the velocity of runoff that decimate percolation of rainwater into the subsoil. ii) The man-made mismanagement of headwater catchment areas: a large amount of the Mizoram water budget is driven by precipitation, evapo-transpiration and surface runoff. Slowing the runoff down and increasing infiltration can tip the water budget toward more storage and a concordant increase in watershed hydraulic residence. But, the monsoon runoff water must be driven past the root to recharge groundwater reserve. However, the forest and vegetative covers in the headwater catchment areas and continuously deteriorating due to the common practice of shifting cultivation and uncontrolled felling of trees. The ever deterioration forest and vegetative covers in the headwater catchment areas greatly encourage higher runoff and exaggerated soil erosion that negate recharge to the groundwater system resulting in less or almost base flow in the downstream almost immediately after the rainfall season ceases. Generally water is scarce during January to May because the direct effect of monsoon has depleted and Groundwater is hardly able to feed the springs and streams to maintain their base flow.

Ensuring the availability of water for different purposes such as Domestic, Agricultural, Industrial, etc., in a sustainable manner has become a great concern for the department. Suitable water resources management strategy has to be formulated and

the area specified technology need to be evolved for ensuring effective conservation of water. The Department is being in the process of formulating the comprehensive master plan for the water resources management programme for the State that all the different implementing agencies has to follow so that all the component of the water resources management schemes can be implemented under one umbrella with common unlimited goal.Systematic treatment of the Catchment areas and treatment of the aquifer system to enable to hold larger quantity of water is needed for ensuring the availability of water for different purposes such as Domestic, Agricultural, industrial, etc.

8. GROUND WATER

A Ground Water Resource Assessment Cell headed by Hydro-geologist and supported by Assistant Assistant Hydro-geologist and others has been established in the year 2011 and looks after Ground Water related issues in the whole of Mizoram.

Geology: The geology of the rock type in Mizoram is the repetitive succession of argillaceous and erinaceous sediments and comprised mostly – siltstone, clay stone, compact sandstone of tertiary sedimentary formation and the rock type of formation are generally striking N-S direction with high angle dipping either eastern or western direction. Due to tectonic activities irregular joint set patterns are prominent.

Ground Water Availability: Total area of Mizoram State is composed of tertiary sedimentary formation hydro-geologically rock type can be grouped into two categories i.e. semi-consolidated formation and consolidated formations, because of the heterogeneity of rock formation, the occurrence and movement of ground water resources in these areas are localized.

Ground Water Potential: The Estimation Committee constituted for the evaluation of ground water potential has assessed that the utilizable ground water potential in the State to be 0.040 BCM and the net draft is meager 0.00035 BCM. Thus, there is scanty development of ground water and the level of ground water development for the entire State is 0.90% only.

* Analysis of survey data and rainfall data shows that ground water level within the state is directly proportional to the amount of rainfall.

* Ground water is mainly utilized for domestic purposes only. If is not utilized for industrial or irrigation purposes. Therefore, the level of ground water is consistent with depth ranging from 8.79-14.76 mbgl.

* It can be concluded that in Mizoram there is no over-exploitation of ground water. Hence, depletion of ground water is not a major concern at present status. Therefore, the potentiality of ground water resources in the state is yet to be harness. However, conservation and artificial recharge structures for replenishing ground water need to be considered for the future.

* The number of bore holes surveyed is not consistent. This is due to the collapse of bore well in some areas. Therefore, casing pipe should cover the entire thickness of soft sedimentary layers or highly weathered rock information.

* In the last survey record, the number of bore holes surveyed increases to 209 which is a positive sign. However, for the entire state having a geographical area of 21081 sq.km and eight(8) districts, the number of bore holes surveyed is not yet satisfactory.

ABSTRACT OF GROUND WATER DEPLETION SURVEY OF MIZORAM, 2000 - 2013

Sl.No	Year Of Survey	Total Reading of Water Level In meter	Bore hole Surveyed in Nos.	Total Reading of Water Level In meter	Bore hole Surveyed in nos.	Average Water Level In meter		Average Total of Water Level in meter	Average rainfall in mm
		Pre-Monsoon		Post - Monsoon		Pre-Monsoon	Post-Monsoon		
1	2000-2001	585.84	50	561.11	50	11.71	11.22	11.46	2574.16
2	2001-2002	303.99	33	268.34	32	9.21	8.38	8.79	2705
3	2002-2003	491.38	37	368.86	32	13.28	11.52	12.4	2546
4	2003-2004	636.98	49	587.76	56	12.99	10.49	11.74	2751
5	2004-2005	751.94	54	554.25	54	13.92	10.26	12.09	2094
6	2005-2006	1160.52	89	935.37	92	13.03	10.16	11.59	2338.2
7	2006-2007	895.42	63	518.42	105	14.21	4.99	9.6	3140.4
8	2007-2008	471.83	37	368.86	32	12.75	11.52	12.13	2174.9
9	2008-2009	992.3	77	826.2	60	12.88	13.77	14.76	2051.7
10	2009-2010	895.42	63	555.46	63	14.21	8.81	11.51	2888.5
11	2010-2011	1122.68	90	662.41	66	12.47	10.03	11.25	2379.1
12	2011-2012	2181.5	173	2208.42	172	12.6	12.82	12.71	2532
13	2012-2013	2552.18	209	2364.56	207	12.21	11.42	11.81	2487

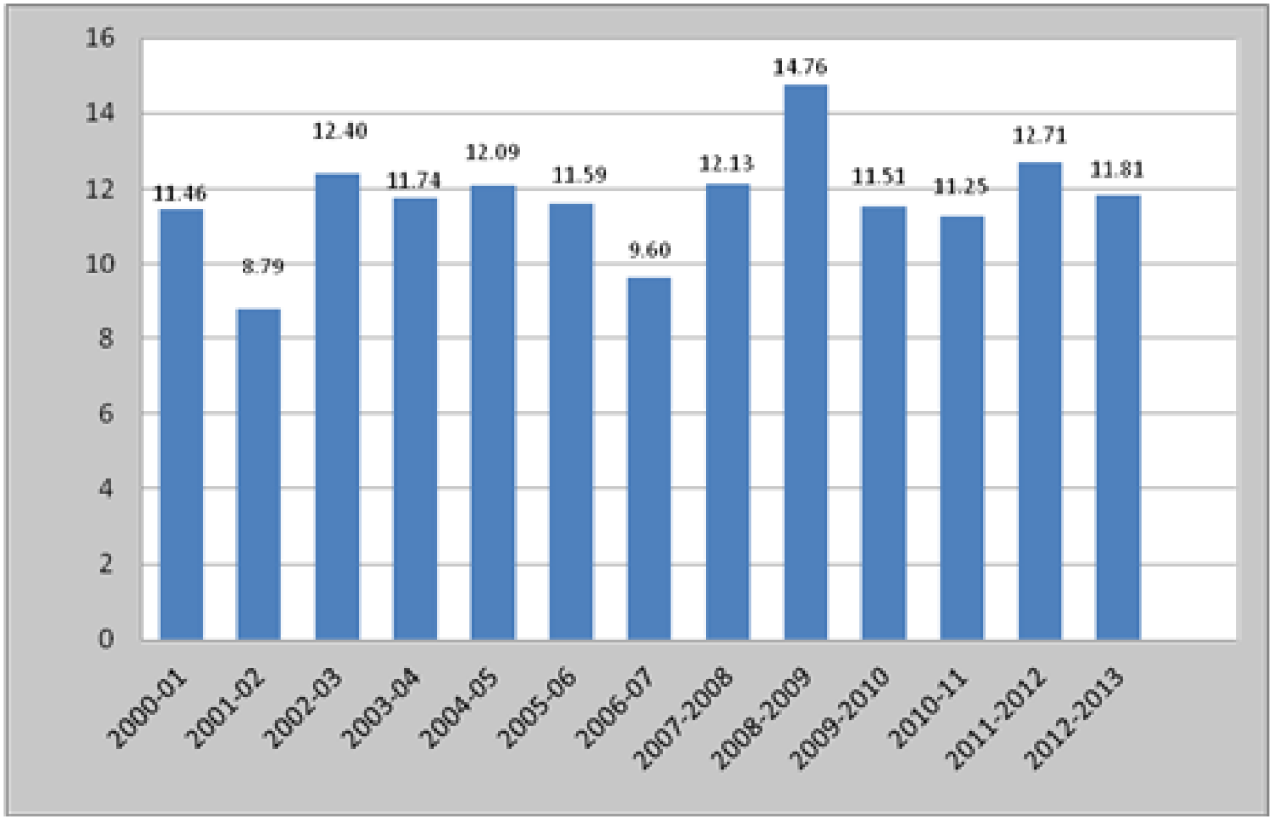


Figure: Averaged Ground water level in Mizoram during 2001-2013

9. OTHER INFORMATIONS:

(1) LIST OF FUNCTIONAL HANDPUMP AND SUBMERSIBLE PUMP WITHIN MIZORAM (AS ON 1.4.2018) - *Source: GW&QC Division*

Division	No of Tand pump Tube-Well							
	IM-II	Function	Non-Function	IM-III	Function	Non-Function	Total	Nos of Submersible Pump
AWDD N	38	32	6	14	9	5	52	0
AWDD S	55	49	6	32	25	7	87	0
RWD(A)	48	40	8	67	39	28	115	12
Lunglei	15	8	7	85	46	39	100	17
Saiha	8	4	4	18	8	10	26	0
Champhai	27	23	4	45	42	3	72	12
Kolasib	13	12	1	55	50	5	68	4
Serchhip	42	41	1	64	57	7	106	7
Lawngtlai	21	12	9	50	39	11	71	0
Khawzawl	31	24	7	56	49	7	87	10
Mamit	28	24	4	23	12	11	51	1
Hnahthial	12	1	11	7	5	2	19	2
G. Total:	**338**	**270**	**68**	**516**	**381**	**135**	**854**	**65**

(3) STATEMENT OF REVENUE TARGETTED AND COLLECTION DURING 2008-2018

(Target for the year 2018-19 is Rs 4320 lakhs.)

Sl No	Year	Target (Rs in lakh)	Amount Collected (Rs in lakh)
1	2008 - 2009	499.82	635.39
2	2009 - 2010	721.00	747.40
3	2010 - 2011	1000.00	764.01
4	2011 - 2012	1486.00	874.83
5	2012 - 2013	1332.59	1412.58
6	2013 - 2014	1800.00	1870.72
7	2014 - 2015	2066.00	2281.60
8	2015 - 2016	2500.00	3568.62
9	2016 - 2017	3700.00	3751.67
10	2017 - 2018	4000.00	4005.78

(4) STATEMENT OF HOUSE WATER CONNECTION IN URBAN & RURAL (As on 1.4.2018)

Sl No	District	Urban	Rural	Total:
1	Aizawl	51769	2457	54226
2	Champhai	7387	3233	10620
3	Kolasib	5899	1850	7749
4	Lawngtlai	1667	1475	3142
5	Lunglei	12643	1939	14582
6	Mamit	1856	1918	3774
7	Saiha	3022	789	3811
8	Serchhip	4088	0	4088
	G. Total:	**88331**	**13661**	**101992**

(5) STATUS OF SWACHH BHARAT MISSION (GRAMIN) - *Source : District secretaries*

Sl No	District	No. of villages	IHHL		Achievement upto 31.3.2018			
			BPL (2017-18)	APL (2017-18)	BPL	APL	CSC	SLWM
1	**Aizawl**	94	0	0	12441	4176	76	22
2	**Champhai**	79	0	0	6792	1099	69	25
3	**Kolasib**	34	0	0	9120	1074	23	0
4	**Lawngtlai**	156	2839	4146	20291	7330	149	22
5	**Lunglei**	158	4016	2609	23692	8097	162	16
6	**Mamit**	84	1072	608	8439	3568	53	3
7	**Siaha**	52	1488	0	10357	568	0	0
8	**Serchhip**	35	0	0	5172	3001	77	20
	Total	**692**	**9415**	**7363**	**96304**	**28913**	**609**	**108**

(6) TENTATIVE LIST OF NOTIFIED SERVICES UNDER MIZORAM RIGHT TO PUBLIC SERVICES BILL 2014 (see sub-section (1) of Section 4)

S.N	Name of notified services	Name of department	Designated officer	Stiuplated time limit (in days)	First appellate authority	Second appellate authority
1	Domestic water supply connection to house hold	Public Health Engineering Department	Sub-divisional officer of the concerned sub-division	1) From submission of application till sanctioning of the connection = 30 days 2) from payment/deposed of required fund by applicant till installation (supply of water) to consumer=30 days	Executive Engineer of the concerned Division	Superintending Engineer of the concerned circle

(7) REVISED RATE OF WATER CHARGES

1. A minimum of Rs. 200/- (Rupees two hundred) only shall be collected as service charge for supply of water up to 5,000 (five thousand) liters per month per water connection.
2. Rs. 45/- (Rupees forty five) per kilo liters of water per connection shall be collected service charge for supply of water in excess of 5,000 (five thousand) liters per month but not exceeding 10,000 (ten thousand) liters per month per water connection.
3. A minimum of Rs. 75/- (Rupees seventy five) per kilo liters of water per water connection shall be collected as service charge for supply of water in excess of 10,000 (ten thousand) liters per month but not exceeding 20,000 (twenty thousand) liters per month per water connection.
4. A minimum of Rs. 90/- (Rupees ninety) per kilo liters of water per water connection shall be collected as service charge for supply of water in excess of 20,000 (twenty thousand) liters per month per water connection but not exceeding 30,000 (thirty thousand) litres per month per water connection.
5. A minimum of Rs. 105/- (Rupees one hundred five) per kilo liters of water per water connection shall be collected as service charge for supply of water in excess of 30,000 (thirty thousand) litres per month per water connection.
6. Rs. 150/- (Rupees one hundred fifty) only per kilo liters of water shall be charged as service charge if water is purchased from the Department depending upon the availability of water.
7. Rs. 30/- (Rupees thirty) only per month shall be charged as service charge to each family or household of consumer from Public Point or Tube wells within Mizoram where operation and maintenance of water supply is taken up by the Department.

(8) LALHMACHHUANA'S EQUATIONS FOR WATER TARIFF

General Equations

$A_1 = A_{min}$	iff $0 < q_1 \leq 5$ kl	.....	(i)
$A_2 = A_{min} + q_2 r_2 - 5r_2$	iff 5 kl $\leq q_2 \leq$ 10 kl	.....	(ii)
$A_3 = A_{min} + q_3 r_3 - 5 (2r_3 - r_2)$	iff 10 kl $\leq q_3 \leq$ 20 kl	.....	(iii)
$A_4 = A_{min} + q_4 r_4 - 5 (4r_4 - 2r_3 - r_2)$	iff 20 kl $\leq q_4 \leq$ 30 kl	.....	(iv)
$A_5 = A_{min} + q_5 r_5 - 5 (6r_5 - 2r_4 - 2r_3 - r_2)$	iff 30 kl $\leq q_5$	.....	(v)

Simplified Equations

A_1 = Rs. 200	iff $0 < q_1 \leq 5$ kl	.....	(i a)
$A_2 = (45q_2 - 25)$	iff 5 kl $\leq q_2 \leq$ 10 kl	.....	(ii a)
$A_3 = (75q_3 - 325)$	iff 10 kl $\leq q_3 \leq$ 20 kl	.....	(iii a)
$A_4 = (90q_4 - 625)$	iff 20 kl $\leq q_4 \leq$ 30 kl	.....	(iv a)
$A_5 = (105q_5 - 1075)$	iff 30 kl $\leq q_5$	.....	(v a)

(9) DESIGNATED OFFICER IN RESPECT OF THE RTI ACT 2005 (NO. 22 OF 2008) DT. 4th Sept. 2017

Sl. No.	Name of Office	Name & Designation of officer	Designa-ted as	Designated for Interim period
1	Engineer-in-Chief, Office, PHED, Khatla, Aizawl	Lalmuanzova, E-in-C, PHED	DAA	Anup Chhetry, SE(M), E-in-C, PHED
		Anup Chhetry, SE(M), E-in-C, PHED	SPIO	C. Lalhmahruaia, EE(M), E-in-C, PHED
		C. Lalhmahruaia, EE(M), E-in-C, PHED	SAPIO	
2	Chief Engineer Zone-I Office, PHED, Khatla, Aizawl	Lalhmachhuana, Chief Engineer, Zone - I, PHED	DAA	Ngentluanga, E.O to CE, Zone - I
		Ngentluanga, E.O to CE, Zone - I	SPIO	H.Lalnunthanga, E.O to CE, Zone-I Office.
		H.Lalnunthanga, E.O to CE, Zone-I Office.	SAPIO	
3	Chief Engineer, Zone-II Office, PHED, Khatla, Aizawl	C. Lalremsiama, C.E., Zone - II, PHED	DAA	Lalhruaia, E.O to CE, Zone-II Office
		Lalhruaia, E.O to CE, Zone-II Office	SPIO	Lalropuia, EE(P), CE, Zone-II Office
		Lalropuia, EE(P), CE, Zone-II Office	SAPIO	
4	Aizawl WATSAN Circle Office, PHED, Tuikhuahtlang, Aizawl	Lalrothanga, SE, Aizawl WATSAN Circle	DAA	Lalzuimawii, EE, (P) Aizawl WATSAN Circle
		Lalzuimawii, EE (P) Aizawl WATSAN Circle	SPIO	T.Thangchhuana, AE, Aizawl WATSAN Circle
		T.Thangchhuana, AE, Aizawl WATSAN Circle	SAPIO	
5	Aizawl Water Distribution Division North Office, PHED, Tuikhuahtlang, Aizawl	ZD. Dengthuama, EE, Aizawl Water Distribution Division North, PHED	SPIO	H.Doliana, SDO(TC), Aizawl Water Distribution Division North, PHED
		H.Doliana, SDO(TC), Aizawl Water Distribution Division North, PHED	SAPIO	

Sl. No.	Name of Office	Name & Designation of officer	Designa-ted as	Designated for Interim period
6	Aizawl Water Distribution Division South Office, PHED, Tuikhuahtlang, Aizawl	Helen Rodingliani, EE, Aizawl Water Distribution Division South	SPIO	Lalmuankima, SDO(TC), Water Distribution Division South Office
		Lalmuankima, SDO(TC), Water Distribution Division South Office	SAPIO	
7	Aizawl Water Transmission Division Office, PHED, Maubawk, Aizawl	Thanchungnunga, EE, Aizawl Water Transmission Division	SPIO	Snehangsu Dey, SDO(TC), Aizawl Water Transmission Division
		Snehangsu Dey, SDO(TC), Aizawl Water Transmission Division	SAPIO	
8	Ground Water & Quality Control Division Office, PHED, Zuangtui,	Lalthanzuali, EE, Ground Water & Quality Control Division	SPIO	Lalhruaitluanga, SDO(TC), Ground Water & Quality Control
		Lalhruaitluanga, SDO(TC), Ground Water & Quality Control Division	SAPIO	
9	Rural WATSAN Circle Office, PHED, Khatla, Aizawl	HC.Lalnunzira, SE, Rural WATSAN Circle	DAA	HB.Chakma, EE (P), Rural WATSAN Circle
		HB.Chakma, EE (P), Rural WATSAN Circle	SPIO	
10	Rural WATSAN Division Office, PHED, Laipuitlang, Aizawl,	Lalsanga, EE, Rural WATSAN Division, Aizawl	SPIO	
11	Serchhip WATSAN Division Office, PHED, Serchhip	F. Lalsanglura, EE, Serchhip WATSAN Division	SPIO	
12	Kolasib WATSAN Division Office, PHED, Kolasib	H.Lallianmawia, EE, Kolasib WATSAN Division	SPIO	
13	Mamit WATSAN Division Office, PHED, Mamit	Lalzawmliana, EE, Mamit WATSAN Division	SPIO	
14	Sewerage & Sanitation Circle Office, PHED, Tuikhuahtlang, Aizawl	C.Chawnghnuna, SE, Sewerage & Sanitation Circle	DAA	Lalzarliana, EE(P), Sewerage & Sanitation Circle
		Lalzarliana, EE(P), Sewerage & Sanitation Circle	SPIO	Lalrosangi, AE, Sewerage & Sanitation Circle
		Lalrosangi, AE, Sewerage & Sanitation Circle	SAPIO	

Sl. No.	Name of Office	Name & Designation of officer	Designa-ted as	Designated for Interim period
15	Champhai WATSAN Circle Office, PHED, Champhai	Lalrammawia, SE, Champhai WATSAN Circle	DAA	C.Zirkhuma, EE(Planning), Champhai WATSAN Circle
		C.Zirkhuma, EE(Planning), Champhai WATSAN Circle	SPIO	
16	Champhai WATSAN Division Office, PHED, Champhai	J. Kapkima, EE, Champhai WATSAN Division	SPIO	
17	Khawzawl WATSAN Division Office, PHED, Khawzawl	Lalzakhama, EE, Khawzawl WATSAN Division	SPIO	
18	Lunglei WATSAN Circle Office, PHED, Lunglei	K.Vanlalnghaka, SE, Lunglei WATSAN Circle	DAA	C.Lalhmachhuana, EE(P), Lunglei WATSAN Circle
		C.Lalhmachhuana, EE(P), Lunglei WATSAN Circle	SPIO	K.Lalkima, AE, Lunglei WATSAN Circle
		K.Lalkima, AE, Lunglei WATSAN Circle	SAPIO	
19	Rural WATSAN Division Office, PHED,	Alan Lalthalura, EE, Rural WATSAN Division, Lunglei	SPIO	
20	Lunglei Water Supply Maint. Division Office, PHED, Lunglei	H.Lalsiamliana, EE, Lunglei Water Supply Maint. Division	SPIO	
21	Hnahthial WATSAN Division Office, PHED, Hnahthial	C.Lalzidinga, EE, Hnahthial WATSAN Division	SPIO	
22	Lawngtlai WATSAN Division Office, PHED, Lawngtlai	C. Laltlanchhunga, EE, Lawngtlai WATSAN Division	SPIO	
23	Saiha WATSAN Division Office, PHED, Saiha	C.Lalchhuanmawia, EE, Saiha WATSAN Division	SPIO	

(11) DETAIL OF DDO CODE UNDER PHE DEPARTMENT (Ministry Code No.125)

Sl. No.	DDO	DDO Code	DDO Regn. No	DTO Regn. No	Treasury Name	Treasury Code	Office Telephone No.
1	Engineer-in-Chief, PHE	125001	SGV106210B	4010985	Aizawl North	9991012	0389-2322244
2	Chief Engineer, PHE, Zone I	125002	SGV106211C	4010985	Aizawl North	9991012	0389-2323157
3	Chief Engineer, PHE, Zone II	125003	SGV106212D	4010985	Aizawl North	9991012	0389-2310392
4	Superintending Engineer, Aizawl WATSAN Circle	125004	SGV106213E	4010985	Aizawl North	9991012	0389-2323355
5	Superintending Engineer, Rural WATSAN Circle, Aizawl	125005	SGV106214F	4010985	Aizawl North	9991012	0389-2311157
6	Superintending Engineer, Sewerage & Sanitation Circle, Aizawl	125006	SGV106215G	4010985	Aizawl North	9991012	0389-2301691
7	Executive Engineer, Aizawl Water Distribution Division North	125007	SGV106216A	4010985	Aizawl North	9991012	0389-2322173
8	Executive Engineer, Rural WATSAN Division, Aizawl	125008	SGV106217B	4010985	Aizawl North	9991012	0389-2390691
9	Executive Engineer, Ground Water & Quality Control Division	125009	SGV106218C	4010985	Aizawl North	9991012	0389-2351545
10	Executive Engineer, Aizawl Water Distribution Division South	125010	SGV106219D	4010985	Aizawl North	9991012	0389-23100016
11	Executive Engineer, Aizawl Water Transmission Division	125011	SGV106220E	4010985	Aizawl North	9991012	0389-2334260
12	Chief Chemist, State Referral Institute	125012	SGV106221F	4010985	Aizawl North	9991012	0389-2322601
13	Superintending Engineer, PHE, Lunglei	125013	SGV106222G	4010996	Lunglei	999107	0372-2324270
14	Executive Engineer PHE Rural WATSAN, Lunglei	125014	SGV106223A	4010996	Lunglei	999107	0372-2324729

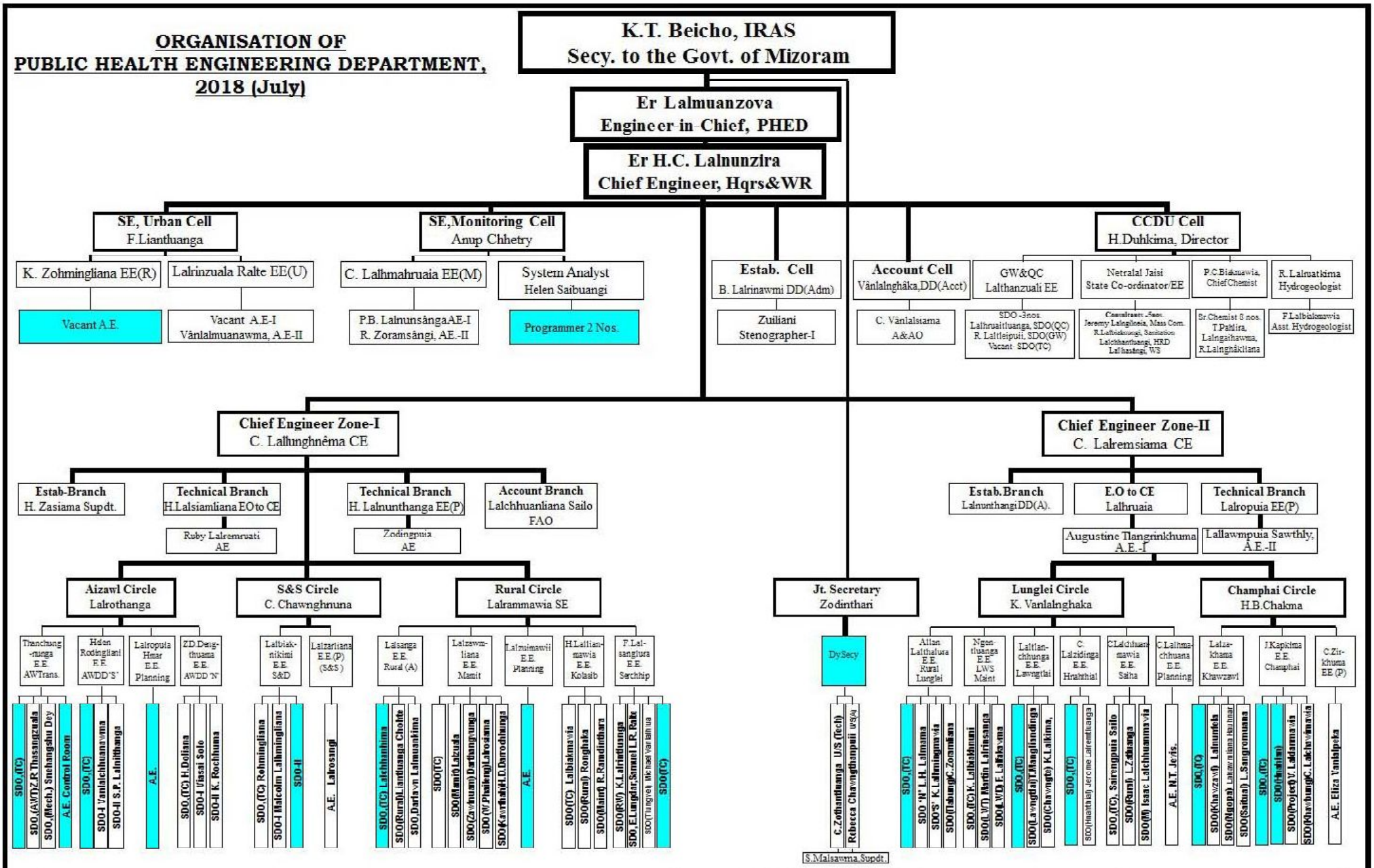
Sl. No.	DDO	DDO Code	DDO Regn. No	DTO Regn. No	Treasury Name	Treasury Code	Office Telephone No.
15	Executive Engineer PHE (LWSM), Lunglei	125015	SGV106224B	4010996	Lunglei	999107	0372-2322507
16	Executive Engineer, PHE, Hnahthial	125016	SGV106225C	4010996	Lunglei	999107	95372-2332540
17	Executive Engineer, PHE, Saiha	125017	SGV106226D	4011055	Saiha	999106	03835-225065
18	Superintending Engineer, PHE (WATSAN),Champhai	125018	SGV106227E	4011000	Champhai	999104	953831-234813
19	Executive Engineer, PHE, Champhai	125019	SGV106228F	4011000	Champhai	999104	953831-235747
20	Executive Engineer, PHE, Khawzawl	125020	SGV106229G	4011000	Champhai	999104	953831-261072
21	Executive Engineer, PHE, Kolasib	125021	SGV106230A	4011011	Kolasib	999103	953837-220622
22	Executive Engineer, PHE, Serchhip	125022	SGV106231B	4011022	Serchhip	999109	953838-222542
23	Executive Engineer, PHE,Lawngtlai	125023	SGV106232C	4011033	Lawngtlai	999108	03835-233527
24	Executive Engineer, PHE,(WATSAN), Mamit	125024	SGV106233D	4011044	Mamit	999105	0389-2565741
25	Hydro-geologist, Ground Water Resources Assessment Cell, PHE	125025	SGV142463B	4010985	Aizawl North	999102	0389-2300160
26	Executive Engineer, PHE, Sewerage & Drainage Division	125026	SGV142465D	4010985	Aizawl North	999102	0389-2324489

(12) ABBREVIATIONS

Mbgl	-	Metre below ground level
BCM	-	Billion cubic metre
NTU	-	Newton Turbidity Unit
HP	-	Horse Power
EM	-	Electric Motor
DE	-	Diesel Engine
DG Set	-	Diesel Generating Set
KVA	-	Kilo Volt Ampere
IVSS	-	Improvement of Village Spring Source
RGNDWM	-	Rajiv Gandhi National Drinking Water Mission
DWSM	-	District Water & Sanitation Mission
ARWSP	-	Accelerated Rural Water Supply Programme
BRC	-	Block Resources Centre
CCDU	-	Communication and Capacity Development Unit
IEC	-	Information Education and Communication
HRD	-	Human Resources Development
PRI	-	Panchayati Raj Institution
MIS	-	Management Information System
R&D	-	Research & Development
O&M	-	Operation & Maintenance
NLCPR	-	Non-Lapsable Central Pool of Resources
SPA	-	Special Plan Assistance

NABARD	-	National Bank for Agriculture and Rural Development
NERDP/CSS	-	North Eastern Regional Development Programme/Centrally Sponsor Scheme
NRDWQM&S	-	National Rural Drinking Water Quality Monitoring & Surveillance
NRDWP	-	National Rural Drinking Water Programme
VWSC	-	Village Water & Sanitation Committee
KAP	-	Knowledge, Attitude & Practice
IS/BIS	-	Indian Standards/Bureau of Indian Standards
WHO	-	World Health Organization
IHHL	-	Individual Household Latrine
APL	-	Above Poverty Line
BPL	-	Below Poverty Line
WATSAN	-	Water Supply and Sanitation
MGNREGS	-	Mahatma Gandhi National Rural Employment Guarantee Scheme
LPCD	-	Litre Per Capita Per Day
CSC	-	Community Sanitary Complex
ODF	-	Open defecation free
AMRUT	-	Atal Mission for Rejuvenation and Urban Transformation
EAP	-	Externally Aided Project

ORGANISATION OF PUBLIC HEALTH ENGINEERING DEPARTMENT, 2018 (July)



R E F E R E N C E S

1. AWTD = Aizawl Water Transmission Division
2. AWDD = Aizawl Water Distribution Division
3. CCDU = Communication and Capacity Development Unit
4. DD Accts = Deputy Director (Accounts)
5. DD Admn = Deputy Director(Administration)
6. GW&QC = Ground Water & Quality Control
7. LWSM = Lunglei Water Supply Maintenance
8. S & D = Sewerage & Drainage Division
9. S&S = Sewerage & Sanitation
10. TC = Technical Consultant
11. Hqrs&WR = Headquarters & Water Resources

SANCTIONED POST :

1. Engineer -in- Chief = 1 No.
2. Chief Engineer = 3 Nos.
3. SE/Jt. Secy(Tech) = 9 Nos.
4. EE/US(Tech)/CCDU/SIPMIU = 31 Nos.
5. AE/SDO = 68 Nos.
6. Hydrogeolosist = 1 No.
7. Asst. Hydrogeologist = 1 No
8. Stenographer G -I = 1 No
9. Divnl. Acctts. = 16 Nos
10. DDA (Adm) = 2 Nos
11. DDA (Accts) = 1 No
12. FAO = 1 No
13. A&AO = 1 No
14. System Analyst = 1 No
15. Programmer = 2 Nos.
16. Superintendent = 1 No
17. Chief Chemist = 1 No.
18. Sr. Chemist = 8 nos.