



# DISASTER MANAGEMENT PLAN

DEPARTMENT OF IRRIGATION AND  
PUBLIC HEALTH

GOVERNMENT OF HIMACHAL PRADESH



# CONTENTS

1. About the department.....	7
1.1 Organizational Structure.....	7
1.2 Purpose of the Plan.....	10
1.3 Scope of the Plan.....	10
1.4 Authorities, Codes and Policies .....	11
1.5 Institutional Arrangements for Disaster Management.....	12
1.5.1 State Disaster Management Authority .....	12
1.5.2 State Executive Committee (SEC).....	12
1.5.3 District Disaster Management Authority.....	13
1.6 Details of infrastructure available with the department .....	13
1.6.1 Water Supply .....	13
1.6.2 Flood Protection Works.....	15
1.6.3 Sewerage Schemes.....	15
1.7 Hazard Vulnerability of the State .....	16
1.8 Brief Overview of Major Hazards.....	18
1.8.1 Seismic .....	18
1.8.2 Landslides.....	19
1.8.3 Floods.....	20
1.8.4 Avalanches .....	21
1.8.5 Forest Fire .....	21
1.8.6 Drought .....	21
1.9 Vulnerability and Risk mapping .....	22
1.9.1 Vulnerability of the Department to various hazards.....	22
1.9.2 Gaps in the existing capacity .....	26
2. Prevention and Mitigation .....	27

2.1 Risk Prevention: .....	27
2.2 Risk Mitigation .....	28
2.3 Mainstreaming DRR into Development Planning .....	28
2.4 Disaster Preparedness .....	29
3. Disaster Response and Relief .....	30
3.1 Response Plan .....	30
Mechanism for early warning and dissemination .....	30
Trigger Mechanism for response.....	30
Nodal Officers to perform Emergency Support Functions (ESFs) roles in emergency.....	30
3.2 Incident Response Teams (IRTs) at all levels .....	31
State level IRT for IPH Department.....	31
Circle level IRT for IPH Department. ....	32
Division level IRT for IPH Department.....	33
3.3 Delegation of financial power during disasters .....	33
3.4 Reporting procedures and format.....	34
3.5 Coordination with NGOs and Voluntary Sector and coordination for.....	34
3.6 Disaster damage assessment system.....	34
3.7 Roles and responsibilities and coordination mechanism for the department .....	34
3.8 Response plan .....	35
4. Knowledge Management.....	36
4.1 Knowledge institutions .....	36
5. Review, Update and Dissemination of the Plan.....	37
ANNEXURE.....	38
NOTES .....	45





## 1. ABOUT THE DEPARTMENT

The Department of Irrigation & Public Health Department, Government of Himachal Pradesh has the primary responsibility for development, operation and maintenance of the water-related infrastructure of the state. These include critical functions such as drinking water supply, sewerage system, irrigation system and flood protection works.

The department is presently catering to the water supply needs, irrigation needs, providing to the sewerage system and taking up the flood management works in the State. Presently the state has 9393 water supply schemes, 32219 hand pumps, 2504 Irrigation schemes and 29 sewerage schemes. This constitutes more than 90 percent coverage of access to water supply and sanitary toilets. To cater the agriculture-based economy of Himachal Pradesh, the department has developed irrigation infrastructure for of 2.06-lac hectare area of land has been brought under the command of irrigation schemes.

The department has been highly praised in the recent surveys where Himachal Pradesh has secured 4<sup>th</sup> position in the NSSO sanitation survey 2016 and six districts of the State have secured a position in the Top-15 in the Swachh Survekshan Rankings 2016 (in North East & Special category states).

### 1.1 ORGANIZATIONAL STRUCTURE

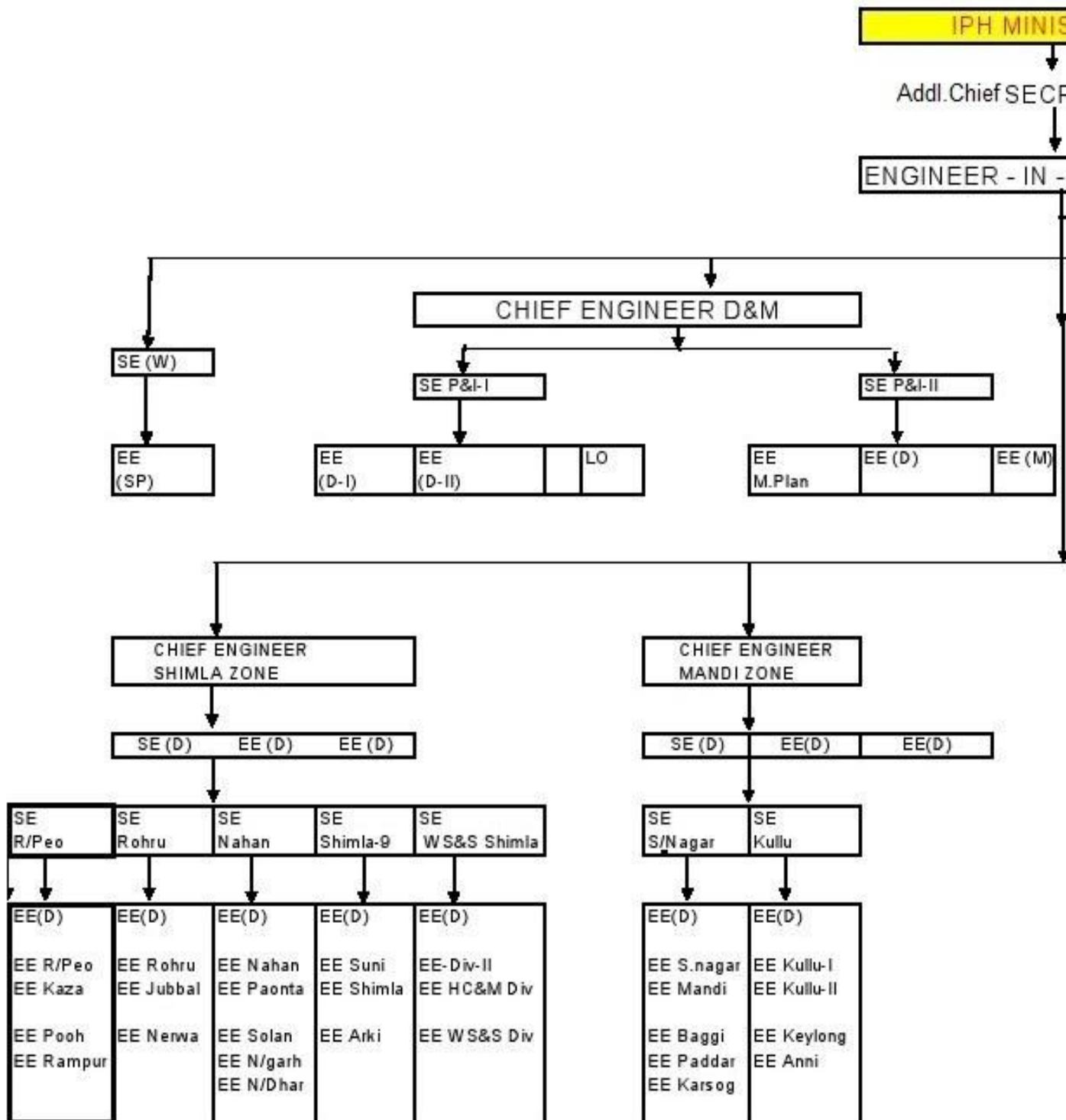
The Engineer-in-Chief (IPH) is the technical head of the department in the State. There are four Zonal Offices headed by the Chief Engineers, 14 Circle Offices headed by Superintending Engineers. 53 Divisional Offices headed by Executive Engineers, 184 subdivisions headed by the Assistant Engineers, 665 section headed by the Junior Engineer. The organization chart of Irrigation and Public Health Department is shown in the next page.

For the proper and timely implementation of other schemes and programmes in the state, and to bring transparency in the system, IPH department has constituted following three committees:

1. State Level Water and Sanitation Mission for effective implementation of Total Sanitation Campaign.
2. State Technical Advisory Committee (STAC)
3. Store Purchase committee

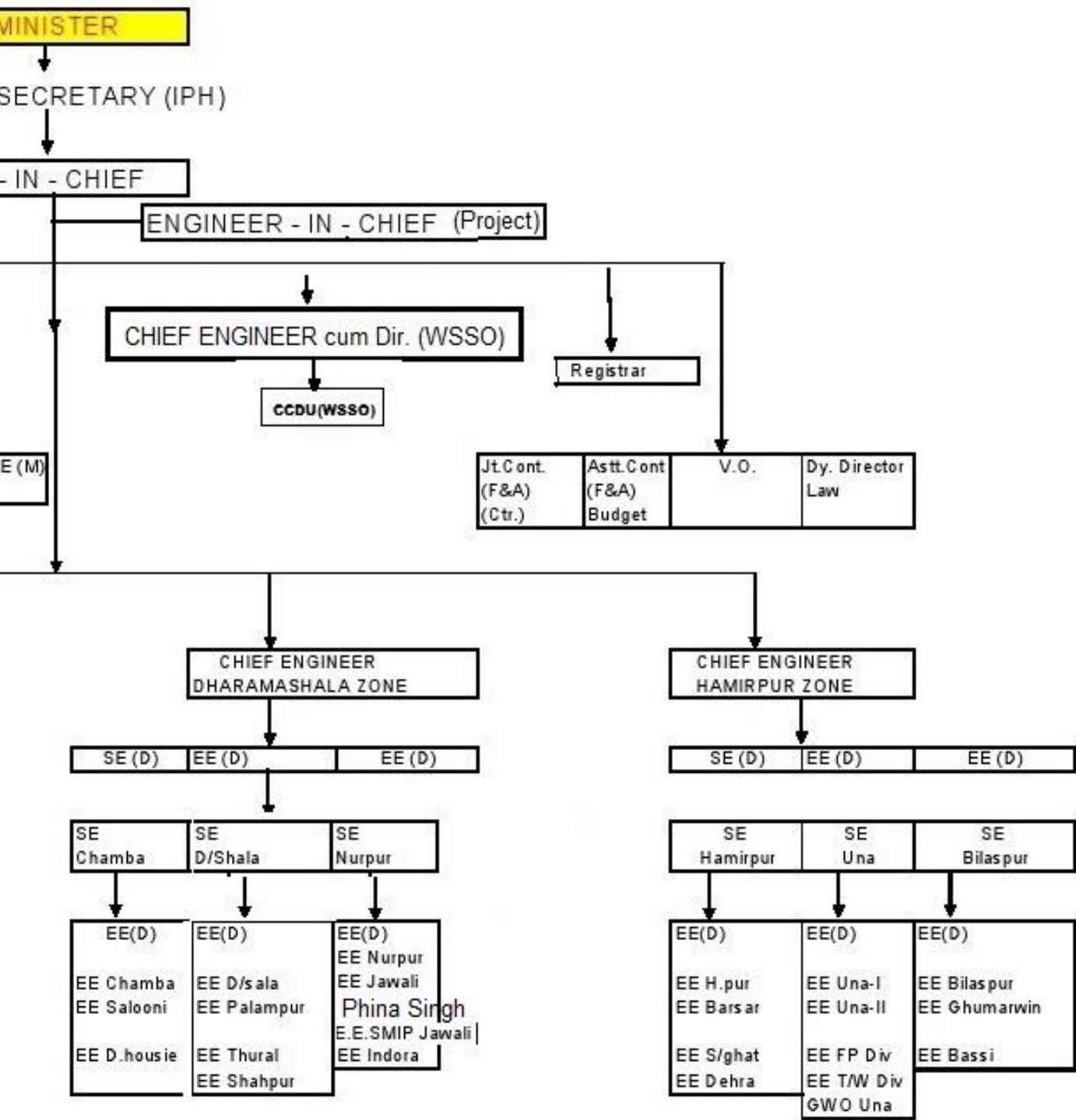
The State Technical Advisory Committee scrutinizes the proposals for all technical works and execution of flood protection works in the state.

## ORGANISATION CHART OF IRRIGATION AND PUBLIC HEALTH





# HEALTH DEPARTMENT , HIMACHAL PRADESH



## 1.2 PURPOSE OF THE PLAN

Every department of the State Governments is legally mandated under Section 40 of Disaster Management Act 2005 to prepare its disaster management plan in accordance with the guidelines laid down by the State Disaster Management Authority. The Act stipulates that while preparing the plan, every Department shall make provisions for financing the activities specified therein<sup>1</sup>. The plan shall be reviewed and updated annually<sup>2</sup> and a report on the status of implementation of the plan has to be furnished to the State Executive Committee.<sup>3</sup>

Department of Irrigation and Public Health is responsible for Water, sewerage system, irrigation system and flood protection works in the state. Increasing hazard risk with population pressure requires adequate preparedness and mitigation measures to deal with any unforeseen circumstance, this plan will provide guidance to the department to manage risks of disasters before, during, and after disasters. This includes assessing the sectoral and departmental risks of disasters, mitigating the existing risks of disasters, preventing the creation of new risks of disasters, presenting the status of its preparedness to perform its role and responsibilities as defined in the State Disaster Management Policy and State Disaster Management Plan, measures proposed for strengthening capacity-building and preparedness.

The objectives of this plan are to facilitate the Irrigation and Public Health in the following:

- Identifying assets / infrastructure of the department exposed to natural hazards;
- Undertake prevention and mitigation measures;
- Undertake preparedness measures;
- Assign role and responsibilities for various tasks to be performed by the department in accordance with the State DM Policy and State DM Plan;
- Mount prompt and coordinated response and recovery at various levels in the post-disaster phase

## 1.3 SCOPE OF THE PLAN

Department of IPH has the primary responsibility to manage floods, providing water supply needs and sewerage systems in the State. Irrigation and Public Health Systems are affected by any natural or man-made disasters. Hence, in accordance with the Disaster Management Act 2005 and Himachal Pradesh Disaster Management Plan 2012, the scope of this plan is to plan and prepare for all hazards having an impact on IPH systems.

Department of Irrigation and Public Health plays a critical role in the wellbeing of the population of Himachal Pradesh with more than 100% coverage to safe drinking water. The department has been highly praised in the surveys where Himachal Pradesh state secured 4<sup>th</sup> position in the NSSO sanitation survey 2016.

There are 19 dams in the state and the agriculture-based economy can achieve higher productivity levels by further strengthening their irrigation infrastructure. Also to be able to provide uninterrupted services and secure the structures, the scope of this plan includes all the stakeholders. Some of the key functions the IPH Department is expected to discharge to strengthen IPH systems in the state are as under:

---

<sup>1</sup> Section 40(2)

<sup>2</sup> Section 40(1)(b)

<sup>3</sup> Section 40(3)

- Identify hazards and analyse risks to the IPH systems/infrastructures of the state to different natural as well as man-made hazards;
- Undertake measures for prevention and mitigation of disasters impacting IPH systems in the state;
- Integrate disaster mitigation measures in all the central and state-sponsored schemes, projects and programmes being implemented by the Department of IPH;
- Undertake capacity building programmes for the staff of IPH department;
- Assign roles and responsibilities of each concerned agency on relation to pre-during-post disaster phases.

## 1.4 AUTHORITIES, CODES AND POLICIES

Department of IPH will be guided by:

1. HP PWD Specification 1990 (CIVIL WORKS)
2. HP PWD Specifications 1996 (ELECTRICAL WORKS)
3. PWD Manual of Orders
4. PMKSY Guidelines and specifications for preparation of DPR, execution of works & Accounts Manual.
5. PWD. Manual and code, Punjab manual and code.
6. Manual on Conservation of Soil and Water
7. Manual on Irrigation Water Management
8. Manual on Canal Linings
9. Manual on Flood Forecasting
10. Office Manual Government of H.P. (November 20, 1973)
11. Central Board of Irrigation and Power Investigation Manual for Storage Reservoirs (October 1956)
12. Analysis, Design and Details of Structures Vol. III Steel Structures
13. ASCE Manuals and Reports on Engineering Practice-54 Sedimentation Engineering
14. Water and Wastewater Engineering Vol I Water Supply and Wastewater Removal.
15. Design of Small Canal Structures
16. Indian Journal of Environmental Health
17. Land Acquisition Act, 1894
18. H.P. Water Supply Act, 1968
19. Manual on Flood Forecasting 1980
20. Manual on River Behavior Control & training.
21. Operational Manual for Water Quality Testing Laboratories
22. Code & specification of State PWD
23. Procedure of PMKSY, NABARD, and other Centrally sponsored scheme & projects
24. Codes and specification of BI-S related to the fields of Irrigation, Hydrology, Sewerage pipes etc.
25. Engineering reference books
26. HP.PWD Schedule of rates 1999 (CIVIL WORKS)
27. HP.PWD Schedule of rate 1996 (ELECTRICAL WORKS)

Following are the guidelines for specific programmes allocated to this Department:

1. Guidelines on Rural Water Supply Programme
2. Executive Guidelines for implementation of Water Quality Testing Laboratories
3. CCDU Guidelines
4. HP Water Pollution Act
5. HP Ground Water Act (Agency)

For the functions related to Disaster management following guidelines are to be followed:

1. Disaster Management Act 2005
2. National Disaster Management Plan 2016
3. Himachal Pradesh Disaster Management Plan 2012
4. National Guidelines issued by the NDMA
5. Guidelines and provision for State Disaster Response Fund (SDRF)
6. Guidelines for administration of the National Disaster Response Fund (NDRF)

## 1.5 INSTITUTIONAL ARRANGEMENTS FOR DISASTER MANAGEMENT

The State Government has adopted the Disaster Management Act 2005 as enacted by the Govt. of India for providing an effective mechanism for Disaster Management in the State of Himachal Pradesh.

---

### 1.5.1 STATE DISASTER MANAGEMENT AUTHORITY

As per clause b of sub-section (2) of Section 14 of the Disaster Management Act 2005, the Himachal

Pradesh Disaster Management Authority under the chairperson of the Honourable Chief Minister was constituted on 1st June 2007 with the following persons as a member of the Himachal Pradesh Disaster Management Authority (HPSDMA):

1. Honourable Chief Minister Chairperson
2. Hon'ble Revenue Minister Member
3. Chief Secretary Chief Executive Officer
4. Principal Secy. (Rev) Member
5. Principal Secy. (Home) Member
6. Principal Secy. (PWD) Member
7. Principal Secy. (Health) Member
8. Director General Police Member
9. Secretary/Add. Secy. (Rev.) Member Secy.

---

### 1.5.2 STATE EXECUTIVE COMMITTEE (SEC)

As per sub-section (1) of section 20 of the Disaster Management Act 2005, the State Executive Committee under the chairmanship of Chief Secretary was constituted by the Government of Himachal Pradesh on 1st June 2007 which comprises **Principal Secretary (I&PH)** as one of the members.

### 1.5.3 DISTRICT DISASTER MANAGEMENT AUTHORITY

As per Section 25 of the DM Act 2005, District Disaster Management Authority has also been constituted in every district of Himachal Pradesh. **Superintending Engineer (I & PH)** is one of the members of DDMA which is chaired by the Deputy Commissioner of the district.

Irrigation and Public Health Department has been given very specific roles and responsibilities as Primary and Support Agency for disaster management under the HP State Disaster Management Plan, which are explained as under:

#### Responsibility of IPH Department

Function	Primary Agency	Secondary Agency	Role of Dept. of IPH
Sanitation / Sewerage Disposal	Urban Development and Rural Development	Irrigation and Public Health	<ul style="list-style-type: none"> <li>Repair the sewer leakages immediately</li> <li>Provide bleaching powder to the primary agencies to check maintain sanitation.</li> </ul>
Drinking water	Department of IPH	Department of Urban Development	<ul style="list-style-type: none"> <li>Provide clean drinking water;</li> <li>Transportation of water with minimum wastage;</li> <li>Ensure that sewer pipes and drainage are kept separate from drinking water facilities.</li> </ul>
Fire Fighting	Fire Department	Department of IPH	<ul style="list-style-type: none"> <li>Provide water for firefighting system</li> </ul>

## 1.6 DETAILS OF INFRASTRUCTURE AVAILABLE WITH THE DEPARTMENT

### 1.6.1 WATER SUPPLY

#### Detail of Completed Water Supply Schemes

Zone	Circle	Nos. of Schemes reported			
		Gravity	Lift	T/Well	Total
Shimla	Shimla	971	234	0	1205
	Rohru	1242	52	0	1294
	Nahan	1091	486	43	1620
	WS & Sew. Shimla-3	0	5	0	5
	R/Peo	523	11	0	534
HMR	Bilaspur	103	163	73	273
	Una	9	46	138	193
	Hamirpur	136	276	0	412

Mandi	Kullu	911	14	1	926
	SNR	1247	194	21	1462
Dharamshala	Nurpur	6	109	48	163
	Dharamshala	143	225	27	395
	Chamba	906	5	0	911
<b>Total</b>		<b>7288</b>	<b>1820</b>	<b>285</b>	<b>9393</b>

### Hand Pumps

Name of Zone	Circle	No. of Hand Pumps installed
Dharamshala	Chamba	1766
	Nurpur	2523
	Dharamshala	6814
Shimla	Reckongpeo	758
	Rohru	1014
	Shimla-9	1980
	Nahan	5168
	Shimla-3	44
Hamirpur	Hamirpur	4580
	Bilaspur	2761
	Una	2340
Mandi	Sundernagar	3259
	Kullu	1234
<b>Grand Total</b>		<b>34241</b>

### Irrigation Schemes

Zone	Circle	Medium	FIS	LIS	Twell	Total
Dharamshala	Chamba	0	204	5	0	209
	Dharamsala	0	26	86	10	122
	Nurpur	0	2	37	203	242
Hamirpur	Una	2	0	58	460	520
	Hamirpur	0	62	74	0	136
	Bilaspur	1	58	21	0	80
Mandi	Sundernagar	1	156	68	23	248

	Kullu	0	114	19	0	133
Shimla	Reckong Peo	0	203	2	0	205
	Shimla-9	0	101	46	0	147
	Rohroo	0	88	13	0	101
	WS&S Shimla-3	0	0	0	0	0
	Nahan	1	142	107	111	361
Total		5	1156	536	807	2504

### 1.6.2 FLOOD PROTECTION WORKS

Total flood-prone area in Himachal Pradesh	2.31 lakh hect
Area protected from floods	24920.21 hect
Target for the year 2016-17	2500 hect

### 1.6.3 SEWERAGE SCHEMES

Name of Circle	No of schemes
Shimla -9	2
Rohru	2
Reckongpeo	3
Una	1
Mandi	2
Kullu	3
Bilaspur	3
Chamba	1
Dharamshala	3
Total	20

## 1.7 HAZARD VULNERABILITY OF THE STATE

Hazards both natural and manmade are of immediate concern to the State of Himachal Pradesh as it frequently faces the fury of one or the other disaster. The fragile ecology and geology of the State coupled with large variations in Physio-climate conditions render it vulnerable to vagaries of nature in one way or the other.

District-wise Hazard Threat in Himachal Pradesh	Earthquake	Landslide	Floods	Avalanche	Forest Fire	Drought	Cloud Burst	Industry	Construction type & Density	Overall vulnerability
Kangra	VH	M	L	-	H	H	M	M	VH	H
Chamba	H	H	H	M	H	M	H	M	H	VH
Hamirpur	H	L	L	-	VH	M	L	M	H	VH
Mandi	VH	H	H	-	VH	M	H	-	H	H
Kullu	VH	VH	H	H	H	M	VH	H	H	VH
Bilaspur	H	M	L	-	VH	M	L	M	M	M
Una	H	L	H	-	M	H	L	H	M	H
Sirmour	H	L	L	-	VH	M	M	H	M	M
Solan	H	M	L	-	M	M	L	H	M	M
Kinnaur	H	H	H	VH	M	M	VH	H	M	VH
Lahaul & Spiti	M	M	M	VH	M	M	H	-	M	H
Shimla	VH	H	H	M	H	M	H	H	M	H

Source: Himachal Pradesh HVRA Report by TARU

It is important to recognize the inevitability of the hazard risk increasing with population pressure and consequent anthropogenic interference besides the lack of awareness and preparedness. Some of the common natural and manmade hazards experienced in State are as follows:

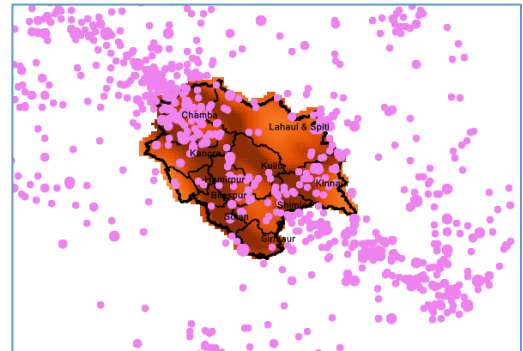


Water- Climate-Related Hazards	<ul style="list-style-type: none"> <li>• Cloud Bursts</li> <li>• Hailstorms</li> <li>• Cold Waves</li> <li>• Snow Avalanches</li> <li>• Droughts</li> <li>• Thunder and lightning</li> <li>• Floods</li> <li>• Snow Storms</li> </ul>
Geologically Related Disasters	<ul style="list-style-type: none"> <li>• Earthquake</li> <li>• Landslide</li> <li>• Rock Falls</li> <li>• Land Subsidence</li> <li>• Land Erosion</li> <li>• Dam Failures / Lake bursts</li> </ul>
Chemical and Industrial Disasters	<ul style="list-style-type: none"> <li>• Specific to industrial belts (Nalagarh, Mehatpur, Baddi-Barotiwala, Kala-Amb and Paonta Sahib)</li> <li>• Industrial Fires</li> <li>• Gas &amp; Chemical Leakages</li> </ul>
Accidents Related Disasters	<ul style="list-style-type: none"> <li>• Forest fires</li> <li>• Electrical fires</li> <li>• Urban fires / Village fires</li> <li>• Building Collapses</li> <li>• Festival / Fair / Temple Stampedes</li> <li>• Road accidents / rail accidents</li> <li>• Boat capsizing</li> </ul>
Biologically Related Disasters	<ul style="list-style-type: none"> <li>• Epidemics</li> <li>• Pest attacks</li> <li>• Food poisoning</li> <li>• Water Contamination</li> <li>• Cattle epidemics</li> </ul>
Climate-induced Hazards	<ul style="list-style-type: none"> <li>• Glacial Lake Outburst Floods (GLOF)</li> <li>• Landslide Dam Outburst Floods(LDOF)</li> <li>• Flash Floods</li> </ul>
Emerging Threats: Human-animal conflict	<ul style="list-style-type: none"> <li>• Monkey Menace</li> </ul>

## 1.8 BRIEF OVERVIEW OF MAJOR HAZARDS

### 1.8.1 SEISMIC

The seismic sensitivity of the state of Himachal Pradesh is very high as over the years a large number of damaging earthquakes have struck the state and its adjoining areas. Seismically it lies in the great Alpine-Himalayan belt running from Alps Mountain through Yugoslavia, Turkey, Iran, Afghanistan, Pakistan, India, Nepal, Bhutan and Burma. Due to its location, the state experiences dozens of mid earthquakes every year. Large earthquakes have occurred in all parts of Himachal Pradesh, the biggest being the Kangra earthquake of 1905. The Himalayan Frontal Thrust, the Main Boundary Thrust, the Krol, the Giri, Jutogh and Nahan thrusts are some of the tectonic features that are responsible for shaping the present geophysical deposition of the state.



The seismic vulnerability of Himachal Pradesh is primarily attributed to northward movement of Indian plate and to the major dislocation tectonic features such as MBF, MBT, Punjab thrust and MCT etc. Besides the longitudinal tectonic feature trending parallel to the Himalayas, there are a large number of transverse fractures, faults that have been responsible for the seismic activity in the Himalayan region in general and Himachal Pradesh in particular. The Kinnaur earthquake of 1975 was associated with transverse Kaurik fault. In fact, about 250 earthquakes with magnitude 4 and 62 have impacted the state so far. It is also pertinent to note that the state of Himachal Pradesh is not only highly sensitive from the earthquake point of view but the risk has also grown many folds as the population and infrastructure have increased considerably over the last 20 years.

Chamba, Kullu, Kangra, Una, Hamirpur, Mandi and Bilaspur Districts lie in Zone V i.e. very high damage risk zone and the area falling in this zone may expect earthquake intensity maximum of MSK IX or more. The remaining districts of Lahaul and Spiti, Kinnaur, Shimla, Solan and Sirmour lie in Zone IV i.e. the areas in this zone are in high damage risk with expected intensity of MSK VIII or more. The spatial distribution and district wise history of past seismic events is given as below.

District-wise occurrence of Earthquakes (1800-2008)

District	Number of earthquakes	Percentage of Total
Chamba	186	33.63
Lahaul & Spiti	99	17.90
Kinnaur	93	16.82
Mandi	53	9.58
Shimla	49	8.86
Kangra	39	7.05
Kullu	19	3.44

Sirmaur	8	1.45
Solan	4	0.72
Hamirpur	2	0.36
Bilaspur	1	0.18
Una	0	0.00
<b>Total</b>	<b>553</b>	<b>100</b>

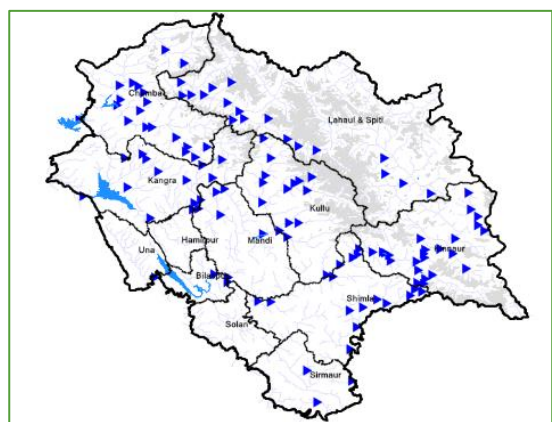
#### District-wise area under Seismic Zones V and IV

District	Area under Seismic Zone V (%)	Area under Seismic Zone IV (%)
Kangra	98.80	01.20
Mandi	97.40	02.60
Hamirpur	90.90	09.10
Chamba	53.20	46.80
Kullu	53.10	46.90
Una	37.00	73.00
Bilaspur	25.30	74.70
Lahaul & Spiti	02.14	97.86
Shimla	00.38	99.62
Solan	01.06	98.94
Sirmaur	Nil	100
Kinnaur	Nil	100
<b>Total</b>	<b>32.02</b>	<b>67.98</b>

### 1.8.2 LANDSLIDES

Landslide is the most common hazard in Himachal Pradesh, which causes immense risk to life and property. Almost every year the state is affected by one or more major landslides affecting the society in many ways. Loss of life, damage to houses, roads, means of communication, agricultural land, are some of the major consequences of landslides. The fragile nature of rocks forming the mountains, along with the climatic conditions and various anthropogenic activities has made the state vulnerable to the Landslides.

District wise landslide vulnerability in the State is as follows.



Landslide Hazard Risk Map  
(HVRA Atlas HP- TARU)

### Landslide Vulnerable areas in Himachal Pradesh (District area in square kilometres)

District	Severe to very high	High	Moderate to low	Unlikely	Total area
Bilaspur	216	842	83	1	1142
Chamba	2120	3829	351	70	6370
Hamirpur	0	851	204	45	1100
Kangra	123	3698	1233	557	5611
Kinnaur	868	4956	498	0	6322
Kullu	1820	3513	65	3	5401
Lahaul & Spiti	127	11637	1825	2	13591
Mandi	968	1978	826	98	3870
Shimla	893	3345	767	14	5019
Sirmaur	95	1805	614	228	2742
Solan	556	1118	157	79	1910
Una	2	678	517	311	1508

### 1.8.3 FLOODS

Floods are another form of natural disaster the State experiences every year. Southwest Monsoonal rainfall during the months of June to August is the dominant cause for triggering floods when rainfall happens to be in excess i.e. 125% or more than the normal. During 1951-1999, Chamba district in the northwestern part of the state had received the highest amount of rainfall expressed as a percentage of the normal with more numbers of successive years of excessive rainfall.

Flash flood is the most frequent and damaging floods that occur with little or no warning causing immense loss to life and property. Flash Floods usually takes place when rapidly rising and flowing surge of water reaching a full peak within few minutes is generated as a result of excessive rainfall or failure of impoundment.

The major causes that are responsible for floods and flash floods in the state of Himachal Pradesh are:

- Cloudburst in upper catchments of the river
- Excessive rainfall in the catchments
- Melting and Bursting of glaciers due to global warming
- Sudden breach or failure of manmade or natural barriers
- Change of river course
- Landslides triggered due to slope failure or tectonic movements leading to LDOF phenomena

Over 40 incidents of flash flood and cloudbursts occurred in Himachal Pradesh in the last 12 years and over 35 were feared dead. In August 1994, the Manimahesh cloudburst and a flash flood washed away almost the entire length of Chamba-Bharmour road (62 kms) where over 50 people were killed and 2000 injured.

The estimated loss was over 450 crore of Rupees. 1997 again saw a heavy flash flood in Maglad in Rampur tehsil of Shimla district.

---

#### 1.8.4 AVALANCHES

Snow avalanches are the sudden slide of a large mass of snow down a mountain. There are several factors, which can affect the occurrence of an avalanche, including local weather, slope, atmospheric temperature, vegetation; terrain and general snowpack conditions. Different combinations of these factors can create low, moderate and extreme weather conditions. Most avalanches are very dangerous and cause huge loss of life and property. The temperature variation and wind speed are directly proportional to avalanches. As per the Snow & Avalanches study established on an average 30 persons are killed every year due to this disaster in the Himalaya.

---

#### 1.8.5 FOREST FIRE

A forest fire is a major cause of degradation of forest. With increasing population pressure, the forest cover of the country is deteriorating at an alarming rate. The forests of the Himachal Pradesh are more prone to forest fire compared to forests in other parts of India due to various biotic and geographic reasons. In Himachal Pradesh, the recorded forest area is 10,46,900 hectares, of which around 9,74,800 hectares cropped area is fire prone. In Shimla district, around 69% of the total area has a history of forest fires and in districts of Chamba, Lahaul-Spiti and Kinnaur it is 44.9% of the total area experience forest fires in summer and 20% area is prone to frequent fires.

---

#### 1.8.6 DROUGHT

Drought is a long period with no or much less rainfall than normal for a given area. Meteorologically drought is defined as a situation when the annual rainfall over any area is less than 75% of the normal. It is termed as moderate if rainfall deficit is between 25 to 50 % and severe if it is more than 50%. The area where the frequency of drought is above 20% of the years examined is classified as drought area and areas having drought conditions for more than 40% of the years represent chronically drought affected area.

#### Years of Severe Drought

District	Years of Severe Drought R/F < 50%
Bilaspur (37 %)	1975
Hamirpur (45 %)	1974
Mandi (44%)	1983
Sirmaur (48%, 41%)	1979,1986
Una (43%, 40 %)	1975, 1981

## 1.9 VULNERABILITY AND RISK MAPPING

The existing understanding and perception of Vulnerability are based on macro-level hazard threat and as per Vulnerability Matrix is shown in the table below. Based on this vulnerability perception a vulnerability map for the state of Himachal Pradesh has been prepared. It is apparent that earthquake vulnerability and associated risk is widespread cutting across the administrative and physical boundaries. This, when seen in association with the population concentration, nature of construction, concentration of institutions like schools and infrastructure three distinct vulnerability & risk zones could be delineated in the state of Himachal Pradesh.

Hazard vulnerability Matrix

District-wise Hazard Threat in Himachal Pradesh	Earthquake	Landslide	Floods	Avalanche	Forest Fire	Drought	Cloud Burst	Industry	Construction type & Density	Overall vulnerability
Kangra	VH	M	L	-	H	H	M	M	VH	H
Chamba	H	H	H	M	H	M	H	M	H	VH
Hamirpur	H	L	L	-	VH	M	L	M	H	VH
Mandi	VH	H	H	-	VH	M	H	-	H	H
Kullu	VH	VH	H	H	H	M	VH	H	H	VH
Bilaspur	H	M	L	-	VH	M	L	M	M	M
Una	H	L	H	-	M	H	L	H	M	H
Sirmour	H	L	L	-	VH	M	M	H	M	M
Solan	H	M	L	-	M	M	L	H	M	M
Kinnaur	H	H	H	VH	M	M	VH	H	M	VH
Lahaul & Spiti	M	M	M	VH	M	M	H	-	M	H
Shimla	VH	H	H	M	H	M	H	H	M	H

### 1.9.1 VULNERABILITY OF THE DEPARTMENT TO VARIOUS HAZARDS

*And Capacity of the Department to deal with the identified disasters*

The general hazard vulnerability matrix, to which the state is prone to be shown in the table above. Besides this, the IPH Department is prone to following losses

- i. Damage of pipeline during high-intensity rainfall. Pipelines are washed away and broken due to landslides & floods occurring due to high-intensity rainfall.
- ii. Damage to the structures such as intake structures, treatment plants, water storage tanks during flash floods and avalanches.
- iii. Depletion of water in the sources due to droughts or climate change and lowering of the water table in groundwater sources.

- iv. Contamination of water due to physical, chemical or biological impurities.

The “Disaster Analysis & Management” Report released by the Economics and Statistics Department, Govt. of Himachal Pradesh gives the account of damage caused by different disasters between 2007- 2015.

Disaster damage with reference to the IPH Department (extracted from the report)

#	Structure	Total Damage b/w 2007-15	Worst affected district
1	Water tank	2679	Hamirpur
2	Water distribution system	72003	Kangra
3	Pumping Station	1008	Kangra
4	Water treatment plant	162	Kangra
5	Other infrastructure of water supply system	670	Hamirpur
6	Sewerage tank	244	Mandi
7	Sewerage tanks distribution system	350	Kullu
8	Sewerage treatment plant	163	Kangra
9	Irrigation system damage due to breach of canal	2475	Mandi
10	Irrigation system damaged due to breach of dam	63	Lahaul & Spiti
11	Irrigation tank	304	Kullu
12	Reservoir	396	Mandi
13	Overhead reservoir	64	Hamirpur
14	Drinking water tank	401	Una
15	Drinking water well	58	Bilaspur

Expenditures incurred in emergency response, repair and restoration by IPH Department from 2007-2015

#	Expenditure Heads	Total Amount b/w 2007-15 (in Lakh)	Amount in 2014-15 (in Lakh)
	Emergency supply of drinking water	2079.00	7.00
	Restoration/repair of damaged water supply	4352.00	2331.00
	Assistance provided to repair / restore damaged irrigation system	1659.00	361.00

The Vulnerability of IPH Department to various hazards, their impact on the assets and capacity of the department to deal with these disasters is shown in the table below:

### Vulnerability of IPH Department when exposed to different disasters

Identified disaster	Vulnerability of department to hazard	Possible form of destruction / damages	Capacity to Deal
Earthquake	Very High	<ul style="list-style-type: none"> <li>• During earthquakes, major destruction is in the form of damage to departmental infrastructure which may affect the capacity of the department to provide the water supply, irrigation, sewerage and other services to the community. The possible losses are as under:</li> <li>• Damage to pipes</li> <li>• Damage to Civil Works such as storage tanks, treatment plants, Kuhl and canals, pumping stations and intake works etc.</li> <li>• Disruption of vehicular access to the department assets due to road blockages.</li> <li>• Damages to Departmental Building</li> </ul>	<p>All new Civil Works such as Water Storage Tanks, Pumping Stations, Aqueducts etc., are being designed to comply with relevant IS codes for Earthquake Resistant Designs.</p> <p>Precedence for retrofitting of old structures is also given based on necessity.</p> <p>There are 20 large dams in Himachal Pradesh, IPH Department may seek advice from Dam Safety Organisation (DSO) of CWC which has a coordinating and advisory role for the State Governments in assisting them to locate causes of potential distress in dams and to recommend measures for their redressal and extend technical assistance</p>
Landslides	Very High	<ul style="list-style-type: none"> <li>• The landslides cause damage to departmental infrastructure which may affect the capacity of the department to provide the water supply, irrigation, sewerage and other services to the community. The possible losses are as under:</li> <li>• Damage to pipes</li> <li>• Damage to Civil Works such as storage tanks, treatment plants, Kuhl and canals, pumping stations and intake works etc.</li> <li>• Disruption of vehicular access to assets of the department due to road blockages.</li> <li>• Damages to departmental buildings</li> </ul>	<p>Efforts are always made to avoid landslide zones, wherever possible. The site for construction of civil works as selected which are less prone to landslide.</p> <p>Inadequate material, manpower and tools &amp; plant are available for restoration of damages.</p> <p>There are 20 large dams in Himachal Pradesh, IPH Department may seek advice from Dam Safety Organisation (DSO) of CWC which has a coordinating and advisory role for the State Governments in assisting them to locate causes of potential distress in dams and to recommend measures for their</p>



			redressal and extend technical assistance
High-Intensity Rainfall and Flash Floods	Very High	<ul style="list-style-type: none"> <li>• The Flash Floods cause damage to departmental infrastructure which may affect the capacity of the department to provide the water supply, irrigation, sewerage and other services to the community. The possible losses are as under:</li> <li>• Damage to pipes</li> <li>• Damage to Civil Works such as storage tanks, treatment plants, Kuhl and canals, pumping stations and intake works etc.</li> <li>• Disruption of vehicular access</li> <li>• Damages to Departmental Building</li> </ul>	<p>Cannot be avoided but the department has adequate manpower and tools &amp; plant for the restoration of damages.</p> <p>IPH Department also undertakes flood protection works in identified flood zones.</p> <p>There are 20 large dams in Himachal Pradesh, IPH Department may seek advice from Dam Safety Organisation (DSO) of CWC which has a coordinating and advisory role for the State Governments in assisting them to locate causes of potential distress in dams and to recommend measures for their redressal and extend technical assistance</p>
Avalanches	High	<ul style="list-style-type: none"> <li>• Damage to pipes</li> <li>• Damage to Civil Works such as storage tanks, treatment plants, Kuhl and canals, pumping stations and intake works etc.</li> <li>• Disruption of vehicular access</li> <li>• Damages to Departmental Building</li> </ul>	The pipes and other structures are should preferably be located below snow lines.
Droughts	Very High	<ul style="list-style-type: none"> <li>• Depletion of discharge in the scheme of WSS.</li> <li>• Depletion of discharge in the scheme of Irrigation Schemes</li> <li>• Lowering of Water Table in Tube Wells and Hand Pumps etc.</li> </ul>	<p>Hand pumps are installed throughout the state.</p> <p>IPH Department is also working for sustainability of drinking water sources</p>
Water Borne Epidemic	Very High	<ul style="list-style-type: none"> <li>• Impacts health and well-being of the community.</li> </ul>	Adequate Bleaching Powder is available to deal with such outbreak of an epidemic. Water Test Kits are provided to field staff.
Fire Outbreak	High	<ul style="list-style-type: none"> <li>• May cause damage to pipes or civil works situated within the fire outbreak region.</li> <li>• Extra requirement of water for firefighting</li> </ul>	Fire Hydrants are being installed in Urban Water Supply Schemes.

---

### 1.9.2 GAPS IN THE EXISTING CAPACITY

1. **Training and Capacity Building:** The training has however been imparted to the personnel at various levels but the capacity of the department to handle the disasters still needs to be strengthened in order to handle the situation more professionally, efficiently and in a time bound manner. Restoration of drinking water supply should be the highest priority followed by sewerage, irrigation and other services. Regular mock drills need to be conducted to train department personnel, general public and NGO's etc. for their preparedness for action at the time of any disaster. The coordination between nodal agencies for disaster mitigation and delineation of roles for support departments/agencies during any such situation should be clearly disseminated to all stakeholders.
2. **Revival and retrofitting of existing assets:** Most of the Civil Works such as underground and overhead water storage tanks, water and sewage treatment plants, office and residential buildings are very old and some of them have outlived their life. Moreover, these structures were constructed in conformity to old standards and codes, which are now revised. Therefore, the study needs to be done on these structures for identification of their service life and if required, these should be replaced in a phased manner.
3. **Keeping inventory reserves for disaster situations:** Adequate inventory of pipes (HDPE/GI), Bleaching Powder, borewell pumps, motors, valves, pipe fittings and bleaching powder etc., required to be maintained at Divisional Level; especially set aside for emergency situations.
4. **Separate Network for Fire Fighting:** At all Water Supply Schemes, a dedicated network for firefighting needs to be provided in consultation with Civil Defense/Fire Department.
5. **Reducing manpower:** The manpower in the department is decreasing due to the retirement of the working personnel and ban of recruitment at an operative level such as keymen/fitter/beldars.
6. **HDPE pipe and PVC Tanks:** There is need to have adequate stock of HDPE pipe and PVC Tanks at each Division/subdivision level since the HDPE pipe is convenient to lay in shortest possible time and for linking the supplies from the nearby water sources.
7. **Tankers and maintenance vehicles:** There is a requirement of water tankers to meet water supply requirement in the hour of crisis. Presently, the department has no tankers and there is no local contractor or transporter on a roll, who could provide tankers during a disaster. An inadequate number of maintenance vehicles such as campers, trucks etc. are available to support in emergencies.
8. **Tool and Plant:** The T&P available with the field staff needs to be upgraded with electric cutters, portable welding machines, grinders, die sets etc., which could be more efficient. Besides this, the fittings for emergent maintenance such as quick couplers, dismantling joints, flexible couplings flanged spigots should be available with the stores for use in exigencies.
9. **NGO Support:** The support of the NGO is must in the hour of crisis as there is need of devoted individuals who work selflessly during the hour of need to help the department to provide services to the population. No database of such agencies and volunteers is available with the department.

## 2. PREVENTION AND MITIGATION

Measures necessary for prevention of disaster, mitigation, preparedness and capacity building in accordance with the guidelines laid down by the National and State Authorities:

- Disasters occur with unflinching regularity in India and Himachal Pradesh causing loss of life, assets and livelihood. The increasingly shifting paradigm from a reactive response orientation to a proactive prevention mechanism has put the pressure to build a fool-proof system, including within its ambit, the components of prevention, mitigation, rescue, relief and rehabilitation.
- Pre-disaster planning is crucial for ensuring an efficient response at the time of a disaster. A well-planned and well-rehearsed response system can deal with the exigencies of calamities and also put up a resilient coping mechanism. Optimal utilisation of scarce resources for rescue, relief and rehabilitation during times of crises is possible only with detailed planning and preparation.

### 2.1 RISK PREVENTION:

Hazard	Prevention
Earthquake	Earthquake as such is unpreventable but its impact in the form of destruction of structures which could be prevented by designing resilient structures to earthquake impacts. All the departmental structures such as buildings, tanks etc. should be designed, taking into consideration the loads/forces generated by the earthquake as prescribed by latest BIS Codes.
Landslides	Landslides can be prevented by plantation of trees in the form of afforestation, creating stormwater drainage system, slope analysis etc. In the department, the practice is to adopt the stretches to lay the pipeline or construct structures which are not prone to landslides. The further site which is least prone to a landslide is selected for construction of tanks civil structure.
High-Intensity Rainfall and Flash Floods	The Early warning system can prevent loss of livestock and property to the great extent. Further Department is also carrying out flood management in the areas which prone to flood.
Avalanches	The impact could be reduced by study and analysis of avalanche-prone zones by relevant agencies.
Droughts	Early weather warning system can help in reducing the impacts of droughts. Could be prevented by increasing the vegetation cover, rain and snow harvesting, conserving water use in domestic, industrial and irrigation sectors such as constructing drip or sprinkler irrigation instead of flow irrigation, construction of rainwater harvesting structures, treatment of catchments etc. The department is working in this direction by executing rainwater harvesting structures, groundwater dykes and check dams etc. as per availability of funds.
Water borne Epidemic	Maintaining hygiene near water sources, preventing solid waste pollution in the water catchments, prevention of open defecation and treatment of drinking water to required standards, disinfection before supplying to the community. This requires strengthening and upgrading treatment plants and chlorination systems, establishment as well as the strengthening of water testing labs, providing field test kits to the staff and training on water treatment and prevention of pollution of water sources.

	However, prevention of pollution in water sources is more of a social problem and needs an integrated approach of all agencies such as PCB, ULB's, IPH, PRI's, NGO's and Administration towards achievements of total sanitation of drinking water catchments.
--	--

## 2.2 RISK MITIGATION

Hazard	Mitigation
Earthquake	<ul style="list-style-type: none"> <li>• Risk audit of the infrastructure</li> <li>• Construction of earthquake resist structures</li> <li>• Rehabilitation of damaged structures and buildings</li> </ul>
Landslides	<ul style="list-style-type: none"> <li>• Risk audit of the infrastructure</li> <li>• By selecting alignments for laying of pipelines which are less prone to Landslides.</li> <li>• By selecting a site for construction of WTP, STP and storage tanks which are less prone to landslides.</li> </ul>
High-Intensity Rainfall and Flash Floods	<ul style="list-style-type: none"> <li>• Risk audit of the infrastructure.</li> <li>• By providing flood protection works in the area which is prone to floods.</li> <li>• Rehabilitation of damaged structures and buildings.</li> </ul>
Avalanches	<ul style="list-style-type: none"> <li>• Risk audit of the infrastructure.</li> <li>• By taking Avalanches prevention means i.e. Wall/protection wall by constructing.</li> </ul>
Droughts	<ul style="list-style-type: none"> <li>• Assessment of likely impact of drought on the services delivered by the department</li> <li>• By constructing recharge structure to sustain the water source.</li> </ul>
Water borne Epidemic	<ul style="list-style-type: none"> <li>• Maintaining hygiene near water sources</li> <li>• Treatment of drinking water to required standards</li> <li>• Disinfection before supplying to community</li> <li>• Testing residual chlorine at far ends of the distribution system</li> <li>• Daily sampling of water and testing for contamination</li> <li>• Checking expiry date of disinfectant such as bleaching powder</li> <li>• Special precaution for chlorination during fairs and festivals. These are the times when the chances of spread of epidemic are more</li> </ul>

## 2.3 MAINSTREAMING DRR INTO DEVELOPMENT PLANNING

Disasters are basically, unresolved problem of development. Development can increase vulnerability. At the same time development can reduce vulnerability. The outcome rests on developmental choices. The seeds of disasters are often sown in development patterns: poor land use planning, environmental management and lack of regulatory mechanisms. It is due to this reason that despite having almost similar

exposures disaster has a greater impact on humans in developing or low developed countries than the developed countries. Therefore, disaster risk can best be addressed through integrating into the developmental planning, programmes and processes. The mapping of hazards, identification of elements at risk and exposure data assists in quantifying risk. Thereafter risk reduction initiatives can be taken.

Mainstreaming DRR is a prerequisite for safe and sustainable development. Infrastructure can help cope with climate uncertainty. This includes natural infrastructure, such as watershed and wetlands, in addition to dams and canals. Some of the key sectors where integration of DRR can be done which is directly or indirectly associated with the IPH department are as follows:

1. Public Infrastructure:
  - a. Incorporate disaster risk impact assessment as a part of the planning process before the construction starts.
  - b. Site analysis and risk-sensitive land-use planning (either avoid development in hazard-prone areas or adopt treatment and mitigation measures)
  - c. Strengthen compliance with the various provisions of the codes – set up hazard safety cell for advice and monitoring
  - d. Disaster resistant technologies mandatory in case of all construction using public / corporate funds.
  - e. Training and capacity building of the department and functionaries.
2. Different schemes of IPH – Scope of work – Some illustrations:
  - a. Water conservation and water harvesting;
  - b. Drought proofing, including forestation and tree plantation;
  - c. Irrigation canals, including micro and minor irrigation works;
  - d. Plantation and horticulture;
  - e. Renovation of traditional water bodies, including de-silting of tanks;
  - f. Land development;
  - g. Flood-control and protection works, including drainage in water logged areas; and
  - h. Rural connectivity to provide all-weather access.

## 2.4 DISASTER PREPAREDNESS

Hazard	Preparedness
Earthquake	Any disruption of water supply due to one of these hazards can be tackled either by linkage of alternative sources through HDPE pipes to satisfy immediate requirements of the public.
Landslides	
High-Intensity Rainfall and Flash Floods	Adequate stock of material, T&P and bleaching powder is available in reserve stock. The field tests kit is available for all the Junior Engineers to ascertain the water quality of the newly tapped alternate sources.
Avalanches	The department is already in the process of preparation of village water security plan to tackle this situation in coordination with the Village water and Sanitation Committee (VWSC) a standing Committee of the Gram Panchayat.
Droughts	
Water Born Epidemic	Adequate Bleaching Powder is available to deal with such outbreak of an epidemic.

	Water Test Kits are provided to field staff. The water samples are tested at site and samples are sent to the sub-divisional and District Laboratory also. The super-chlorination of the water supply to a resort in emergencies.
--	--

### 3. DISASTER RESPONSE AND RELIEF

#### 3.1 RESPONSE PLAN

##### 3.1.1 MECHANISM FOR EARLY WARNING AND DISSEMINATION

The information is to be disseminated by the concerned site official to **EOC** and the nodal officer for Disaster Management i.e. **Executive Engineer (Design)**. The Nodal officer will work in coordination with the District Administration to disseminate the information.

- Receipt of warning from state/district nodal agency for Disaster Management
- The state-level nodal officer (SE-W) shall communicate the information of warning to the concerned nodal officer(s) of the affected district.
- The warning shall be disseminated to the level of workers at grass root through Assistant Engineers, Junior Engineers and Supervisors etc.

##### 3.1.2 TRIGGER MECHANISM FOR RESPONSE

The Nodal Officer Disaster Management will work in coordination with the departmental functionaries in the area, NGOs, VWSCs and the District Administration to trigger response.

##### 3.1.3 NODAL OFFICERS TO PERFORM EMERGENCY SUPPORT FUNCTIONS (ESFS) ROLES IN EMERGENCY

The Superintending Engineer (Works), O/O Engineer-in-Chief, IPH Department, US Club Shimla-1 is designated as the nodal officer for the department for disaster management in the state. The list of nodal officers at the district level is as under:

#	District	Designation	Name of Division	Contact No.
1	Shimla	Executive Engineer	Shimla-9	0177- 2625913
2	Shimla	Executive Engineer	Shimla-1	0177- 2627950
3	Solan	Executive Engineer	Solan	
4	Sirmaur	Executive Engineer	Nahan	01702- 222286
5	Bilaspur	Executive Engineer	Bilaspur	
6	Una	Executive Engineer	No-I Una	01975- 226060
7	Hamirpur	Executive Engineer	Hamirpur	
8	Dharamshala	Executive Engineer	Dharamshala	01892- 223283
9	Chamba	Executive Engineer	Chamba	01899-222410

10	Kinnaur	Executive Engineer	Reckong Peo	01786- 223572
11	Lahaul and Spiti	Executive Engineer	Keylong	
12	Kullu	Executive Engineer	No-1 Kullu	01902- 225036
13	Mandi	Executive Engineer	Mandi	01905- 223687

## 3.2 INCIDENT RESPONSE TEAMS (IRTS) AT ALL LEVELS

*With provision of delegation of authority*

Development and training of Incident Response Teams (IRTs) at State, Zone, Circle, & Division level to deal with any disaster.

### 3.2.1 STATE LEVEL IRT FOR IPH DEPARTMENT

#	Designation	Title
1	Engineer-in-Chief	Chairman
2	Chief Engineer (SZ)	Member
3	Chief Engineer (MZ)	Member
4	Chief Engineer (DZ)	Member
5	Chief Engineer (HZ)	Member
6	Chief Engineer Cum Director (WSSO)	Member
7	Chief Engineer (D&M)	Member
8	Superintending Engineer (Works)	Convener-cum-Nodal
9	Superintending Engineer (P&I-I)	Member
10	Superintending Engineer (P&I-II)	Member
11	Registrar	Member
12	Executive Engineer (SP)	Member
13	Joint Controller	Member
14	Assistant Controller (Budget)	Member

#### **Role and Responsibility of the State Incident Response Team:**

- i. To coordinate with SDMA and other concerned Government Departments
- ii. Visit the spot and assist the Zone Level Response Team for pre-disaster planning.
- iii. To prepare a status report regarding the disaster.
- iv. To facilitate execution of orders for declaring the disaster.
- v. Assess the staff and another logistic requirement for field operation and monitor effectiveness
- vi. To attend training and refresher courses for how to respond after receiving any information related to disaster
- vii. IRT should be familiarized with the SOP / ESF / DM plan of the department as well as State DM plan and their roles and responsibilities

- viii. IRT should prepare and update the DMP periodically by incorporating the view of stakeholders for the effectiveness of the plan
- ix. To ensure availability of funds at District level to meet contingency expenses
- x. To develop the media messages so as to update the status of disaster mitigation and response work
- xi. To monitor and guide the District Response Teams
- xii. To maintain an inventory of all related guidelines, procedures, action plans, district maps and contract numbers
- xiii. To document the lessons learnt at different stages of disaster management and make suggestions for necessary addition/ alteration
- xiv. The department needs to plan to depute officials for the purpose or to plan new recruitment if needed

IRT at State level shall meet at least twice in a year, 1<sup>st</sup> meeting may be held in the 1<sup>st</sup> week of April and 2<sup>nd</sup> meeting in the 1<sup>st</sup> week of October.

### 3.2.2 CIRCLE LEVEL IRT FOR IPH DEPARTMENT.

#	Designation	Title
1	Superintending Engineer	Chairman
2	Executive Engineer (Design)	Convener-cum Nodal officer
3	Executive Engineer (in all divisions under the circle)	Member
4	Circle Head Draughtsman	Member
5	Superintendent works of circle office	Member
6	EO in Circle office	Coordinator

#### **Role and Responsibility of the Circle Level Incident Response Team:**

- i. To coordinate with District Disaster Management Authority (DDMA).
- ii. Provided there are two or more circle offices in one district, both circle level IRT's shall work jointly to coordinate with District Disaster Management Authority (DC).
- iii. To procure required resources as per incident specific action plan
- iv. To manage the overall response activities in the field.
- v. To deploy adequate staff for the response and monitor its effectiveness.
- vi. To attend training and refresher courses to know how to respond after receiving any information related to disaster
- vii. IRT should be familiarized with the SOP/ESF/DM plan at District and State level of the department as well as State DM plan and their roles and responsibilities.
- viii. IRT should prepare and update the district DMP periodically by incorporating the views of stakeholders for the effectiveness of the plan.
- ix. To develop the media messages to update the status of disaster mitigation and response work.
- x. To collect and store disaster-related information for post-incident analysis.
- xi. To visit the affected areas to assess the extent of damages.
- xii. A proposal may be sent to the State headquarter for deputation of officials or for new recruitment.



### 3.2.3 DIVISION LEVEL IRT FOR IPH DEPARTMENT

#	Designation	Title
1	Executive Engineer	Chairman
2	AE to EE	Convener-cum-Nodal officer
3	Assistant Engineers (in all subdivisions under the division)	Member
4	Head Draughtsman	Member
5	Superintendent Division Office	Member

#### Role and Responsibility of the Division Level Incident Response Team

- i. Preparation of the disaster management plan.
- ii. Evaluation of the Disaster Management plan
- iii. Carrying out the mock drill twice a year
- iv. Updating of the plans at regular intervals (at least once a year and after any significant disaster) to ensure that the plan is workable.
- v. Look into the structural safety requirements for various hazards (Earthquake, floods, Road accident etc.).
- vi. During a disaster, the IRT shall coordinate with District control room/ EOCs.
- vii. To help and monitor the working of different teams engaged in relief operation during an emergency in the Division.
- viii. Media management to be carried out by the IRT.
- ix. Mobilizing relief and external support in case of necessity for those who have taken shelter in the departmental buildings/ space.
- x. Identify separate shelter places for the public in case necessary.

*Divisional IRT shall meet at least twice in a year after fifteen days of the meeting of Circle IRT, Similarly Circle IRT shall meet twice in a year within fifteen days after getting the proceedings of the meetings / instructions / guidelines from State IRT. State IRT's 1<sup>st</sup> meeting shall be held in the 1<sup>st</sup> week of April and 2<sup>nd</sup> meeting in the 1<sup>st</sup> week of October every year.*

### 3.3 DELEGATION OF FINANCIAL POWER DURING DISASTERS

*(For single tender / quotation): {Recommendation}*

#	Nature	Maximum Limit of expenditure (in Rupees)	Authorized officer
1	Transportation	50,000/-	District level nodal officer
2	Material & Equipment	50,00,000/-	
3	Temporary Shelters	3,00,000/-	
4	Logistic Arrangements	1,00,000/-	
5	Contingency	1,00,000/-	

### 3.4 REPORTING PROCEDURES AND FORMAT

All the damages caused by the natural disaster are to be reported by the concerned Junior Engineer to the Assistant Engineer and then to Executive Engineer in well-established departmental formats as under:

#	Name of Division	Name of scheme	Date of damage	Nature of damage	Impact of damage on the locality	Possible solution/ alternative	Material required	Amount of funds required	Remarks in addition

### 3.5 COORDINATION WITH NGOS AND VOLUNTARY SECTOR

- Communication with affected people to avoid panic and to distribute relief.
- Coordination with various agencies.
- Help in the proper and equitable distribution of water.
- Creating awareness among the public regarding the disaster and generating their cooperation in the effort of the department.

### 3.6 DISASTER DAMAGE ASSESSMENT SYSTEM

There is a well-established system in the department for assessing the damage to the assets of the department. The reporting is from the concerned fitter / keymen to the concerned work inspector / JE / AE and then to the Division office.

### 3.7 ROLES AND RESPONSIBILITIES AND COORDINATION MECHANISM FOR THE DEPARTMENT

#	Designation	Job description during disaster	Remarks
1	Fitter / keymen	To immediate reporting about the disaster to the WI/Surveyor.	The communication shall be through mobile/landline phones and the same shall be immediately supplemented with the written communication.
2	WI / Surveyor	To measure the loss.	
3	Junior Engineer	To verify the loss and submit the possible solutions and material requirements to do the needful.	

4	Assistant Engineer	To compile the information for the subdivision with some cross checking and send the same to the Divisional office.	Recommendations: Alternative communication system
5	Executive Engineer	To consolidate the information for the entire division and submit the same to the Nodal Officer cum Executive Engineer (design)-Circle.	
6	Nodal Officers cum Executive Engineers	Nodal officer will submit the information about the damage related to the department to the District Administration and work in coordination with the department.	

### 3.8 RESPONSE PLAN

#	Identified disaster	Possible form of destruction
1	Earthquake	Major destruction is in the form of damage to departmental infrastructures such as pipes, tanks, treatment plants, pump stations etc. leading to disruption to the water supply or sewerage facilities
2	Landslide	
3	High-Intensity Rainfall and Flash Flood	
4	Avalanche	
5	Drought	Reduction in discharge of sources

#### Response plan includes:

1. Activation of task teams
2. Emergency Supply (installation of temporary water purification units and distribution through tankers / jerry cans)
3. Provide water to temporary toilets in shelters camps
4. Coordination with voluntary organizations for water distribution and hygiene promotion activities
5. Repair and restoration work

## 4. KNOWLEDGE MANAGEMENT

### 4.1 KNOWLEDGE INSTITUTIONS

The knowledge is being disseminated through training programmes conducted by the department at grass root level through CCDU (Communication and Capacity Development Unit) of the department at Shimla. The Department also works in close coordination with HIPA (Himachal Pradesh Institute of Public Administration) for various training and knowledge sharing programmes for disaster management.

The training programmes on the emerging disaster risks and climate change related topics could be designed with support from Himachal Pradesh State Disaster Management Authority.

## 5. REVIEW, UPDATE AND DISSEMINATION OF THE PLAN

### **Review and Update:**

DM Plan is a “living documents”- would require regular improvement and updation- at least once a year. All the stakeholders should contribute in updating the document with their knowledge and experiences.

The Disaster Management Plan updating will be carried out by the Nodal Officers at a different level and further at the State Level.

### **Dissemination:**

The primary responsibility for dissemination of the plan will be with the Department. It would involve HPSDMA for capacity building at different levels for training and dissemination. The Disaster Management Plan will be disseminated at various levels. Disaster Management Plan will be uploaded in the HPIPH website and the printed document will be supplied to all the stakeholders.

## I. Telephone Numbers of Officers In IPH Department

## ANNEXURE

#	Name of Authority	Designation of Public information officer	S.T.D. code	Telephone No.
1	Administrative Department	Additional Secretary (IPH) to the Govt. of HP.	0177	2621874 2657928
2	Engineer-in-Chief	EE. Store Purchase (IPH) HQ. Shimla-1	0177	2652847
3	Chief Engineer (S) IPH. Department US. Club, Shimla-1	Executive Engineer (Design)	0177	2627950
4	Chief Engineer (NZ) I&PH. Department, Dharamshala.	Executive Engineer (Design)	01892	223283
5	Chief Engineer (CZ) I&PH. Department, Mandi	Executive Engineer (Design)	01905	223687
6	Chief Engineer, S.nehar Project, Fatehpur	Executive Engineer (Design)	01893	256211
7	SE. IPH. Circle Shimla-9	Executive Engineer (D)	0177	2625913
8	SE. IPH. Circle, Rohru	Executive Engineer (D)	01781	240451
9	SE. IPH. Circle Reckong Peo	Executive Engineer (D)	01786	223572
10	SE. IPH. Circle, Nahan	Executive Engineer (D)	01702	222286
11	SE. PMU. Shimla.	Executive Engineer (D)	0177	2650680
12	SE. IPH. Circle, Sundernagar	Executive Engineer (D)	01907	262773
13	SE. IPH. Circle, Kullu	Executive Engineer (D)	01902	225036
14	SE. IPH. Circle, Hamirpur	Executive Engineer (D)	01892	223289
15	SE. IPH. Circle, Dharamshala	Executive Engineer (D)	01899	222586
16	SE. IPH. Circle, Chamba	Executive Engineer (D)	01899	222586
17	SE. IPH. Circle, Nurpur	Executive Engineer (D)	01893	220203
18	SE. IPH. Circle, Una	Executive Engineer (D)	01975	222605
19	SE. SNP. Fatehpur	Executive Engineer	01893	256211

## II. Resource List (Available With Department)

### a. List of vehicles

#	Zone	LMV	HMV
1	Shimla	49	20
2	Hamirpur	38	31
3	Mandi	28	8
4	Dharamshala	57	33
5	HQ Shimla	10	-
6	Total	182	92

### b. List of Manpower

*Total Sanctioned Strength / Vacancy Position of Staff In Respect Of PH Department As On 31-08-2016.*

#	Category	S. S.	Vacancy
1	Engineer-in-Chief	02	0
2	Chief Engineer	05	0
3	Superintending Engineer	21	0
4	Executive Engineer	82	04
5	Assistant Engineer	301	60
6	Sr. Hydrogeologist	02	01
7	Jr. Hydrogeologist	02	0
8	Jr. Geologist	02	02
9	Jr. Geophysicist	01	01
10	Registrar	01	01
11	Joint Controller (F&A)	01	0
12	Astt. Controller (F&A)	03	0
13	Dy. Director (Legal)	02	0
14	Superintendent Gr-I	22	11
15	Planning Officer	05	02
16	Agriculture Dev. Officer	02	02
17	Private Secretary	02	02
18	Assistant Distt Attorney	03	03
19	Junior Engineer	785	251
20	Superintendent Gr-II	87	02

21	Senior Assistant	558	100
22	Personal Assistant	05	0
23	Senior Scale Stenographer	26	09
24	Law officer	06	04
25	Circle Head Draughtsman	14	2
26	Divisional Head D/ Man	61	01
27	Draughtsman	154	45
28	Junior Draughtsman	173	148
29	Clerk/Jr. Assistant	553	255
30	Jr. Office Assistant (IT)	70	68
31	Steno typist	71	63
32	Peon	482	132
33	Chowkidar	237	161
34	Sweeper	85	52
35	Jamadar	15	08
36	Restorar	02	01
37	Daftri	16	11
38	Driver	33	28
39	G.M. Operator	01	0
40	Sr. Technical Assistant	20	03
41	Naib Tehsildar	01	01
42	Divisional Accountant	51	30
43	Ziladar	02	02
44	Kanungo	02	00
	<b>TOTAL:</b>	<b>3969</b>	<b>1466</b>



Category wise sanctioned strength, Existing strength, vacancy position & Posts abolished in respect of WC converted into the regular establishment in IS&PH Department (Both in Live Cadre & Dying Cadre) as on 31.07.2016.

#	Category	Sanctioned Strength	Existing Strength	Vacancy in Live Cadre
	<b>Class-III Industrial</b>	<b>Live</b>	<b>Live</b>	
1	Pump Operator	2870	2266	604
2	Driver	173	113	60
3	Fitter	1182	622	560
4	Mason	211	137	74
5	Black Smith	18	11	7
6	Electrician	96	71	25
7	Foreman/Asstt. Foreman	9	5	4
8	Turner	0	0	0
9	Stone Dresser	2	0	2
10	Asstt. Chemist	9	6	3
11	Data Entry Operator	2	2	0
12	Operator	13	3	10
13	Mech.-cum-Fitter	27	17	10
14	Painter	3	3	0
15	Carpenter	8	8	0
16	Chemist	3	0	3
17	Welder	6	2	4
18	Driller	0	0	0
19	Wireman	1	1	0
20	Mechanic/HP Mechanic	3	2	1
21	Asstt. Driller	8	6	2
22	Lab. Technician	1	1	0
23	Asstt. Dozer Operator	0	0	0
24	Dozer Driver	3	1	2
25	Lab. Assistant	18	3	15
26	Computer Operator	1	1	0
27	Chief Analyst	1	0	1
28	Water Analyst	0	0	0

29	Bacteriologist	3	0	3
	<b>Total</b>	<b>4671</b>	<b>3281</b>	<b>1390</b>
	<b>Class-III Non-Industrial</b>			
1	Work Inspector	580	470	110
2	Store Clerk	70	51	19
3	Surveyor	321	181	140
4	Water Works Clerk	201	147	54
5	IBC/Patwari	55	48	7
6	Complaint Attendant/Clerk	118	84	34
7	Ferro Printer	3	3	0
8	Asst. Store Keeper	0	0	0
9	Canal Inspector.	1	1	0
	<b>Total</b>	<b>1349</b>	<b>985</b>	<b>364</b>
	<b>G. Total-Class-III</b>	<b>6020</b>	<b>4266</b>	<b>1754</b>
	<b>Class-IV Industrial</b>			
1	Beldar	4835	3856	979
2	Pump Attendant	9	8	1
3	Helper	487	195	292
4	Mate	31	27	4
5	Mali	5	5	0
6	Cleaner	25	25	0
7	Lusker	1	1	0
8	Boat Operator	0	0	0
9	Upholster	0	0	0
10	Ferro Khalasi	0	0	0
11	Filter Attendant	0	0	0
12	Pump Operator Helper	38	38	0
13	Stone Breaker	0	0	0
14	Lab. Helper	3	3	0
15	Lab. Attendant	15	0	15

16	Asstt. Plumber	1	1	0
	Total: -	5450	4159	1291
	<b>Class-IV Non-Industrial</b>			
1	Chowkidar	248	180	68
2	Sweeper	8	8	0
	Total: -	256	188	68
	G. Total Class-IV	5706	4347	1359
	<b>Grand Total:-</b>	<b>11726</b>	<b>8613</b>	<b>3113</b>

**III. Identification of suppliers for departmental supplies and pre-contracting for supplies in case of emergencies (to be filled by the department)**

IPH Department has enlisted number of contractors and suppliers. Rate contracts are available for most of the essential items.

#	Agency	Item (Resource and Manpower)	Contact details







