

Government of India
Ministry of Jal Shakti
Department of Water Resources, RD & GR
National Dam Safety Authority

Minutes of the Regional Meeting-cum-Workshop of Western Region States/UTs held by National Dam Safety Authority on 11.11.2022 at Pune

A Regional Review Meeting-cum-Workshop was organized by the National Dam Safety Authority (NDSA) under the chairmanship of Shri J. Chandrashekhar Iyer, Member (D&R), Central Water Commission (CWC) & Chairman, National Dam Safety Authority (NDSA) on 11th November 2022 at Pune to review the various activities undertaken under the Dam Safety Act, 2021 by the State/UT Governments/dam owners of the Western Region for the safety of dams falling under their jurisdiction as well as to sensitize all the stakeholders about the provisions contained in the Dam Safety Act, 2021. Senior officers from Department of Water Resources, RD & GR, Ministry of Jal Shakti, CWC, NDSA and the heads of SCDS/SDSO and dam owners falling under the Western Region participated in the meeting. The list of participants in the meeting is enclosed as **Annexure-I.**

Chairman, NDSA welcomed the participants and briefly outlined the objective of holding the regional meeting-cum-workshop. He stated that the Western region of NDSA has the maximum number of existing specified dams. He further stated that this is the third in the series of regional meeting-cum-workshop being held by the National Dam Safety Authority under the directions of Ministry of Jal Shakti. The Parliament of India has enacted the Dam Safety Act, 2021, which has come into force with effect from 30th December, 2021. The Act provides for surveillance, inspection, operation and maintenance of the specified dam for prevention of dam failure related disasters and to provide for institutional mechanism to ensure their safe functioning and for matters connected therewith or incidental thereto. Under the provisions of the Act, National

Committee on Dam Safety has been constituted and National Dam Safety Authority has been set up at the Central Government level. At the State Government level, State Committee on Dam Safety and State Dam Safety Organisation are to be notified. As on date 28 States & 2 UTs have constituted the SCDS and 26 States & 2 UTs have established the SDSO. He emphasized upon the need for taking all necessary actions timely by all the SCDS and SDSO of the States/UTs as well as the Heads of CPSUs, private dam owners and other agencies, as stipulated under the Act, to ensure the safety of the specified dams under their jurisdiction. He stated that the implementation of the Act is being closely monitored at the highest level in Government of India.

Chairman, NDSA informed that out of 5334 existing dams in the country as per NRLD(2019), pre-monsoon inspections in respect of only 3907 have been carried out during the year 2022, which is not satisfactory. He stressed upon timely carrying out the pre and post monsoon inspection of specified dams. The inspection reports need to be analyzed and appropriate remedial/ rehabilitation works as required are to be carried out in a time bound manner to ensure the safety of dams. The Act has provisions for penalties and offences also. Hence the provisions of the Act need to be taken seriously by all the stakeholders.

Shri Anand Mohan, Joint Secretary (RD & PP), DoWR, RD & GR, MoJS in his opening remarks stated that this region has maximum number of dams. This is the third review meeting after the two held at Coimbatore & Chandigarh. The States in this region are well aware of the importance of water. After around four decades, the Act has finally been enacted and has come into effect. The States having large number of Dams like Maharashtra, Gujarat and Rajasthan should take maintenance and safety of dams on top priority. The provisions of the Dam Safety Act, 2021 are important and should be implemented *in toto* to achieve the intended objectives.

Ms Richa Misra, Member (Admin & Finance), NDSA and JS & FA, DoWR, RD & GR expressed her happiness to be part of the important deliberations. She shared her thoughts on the importance of O&M of dams and the provisions of Dam Safety Act,

2021. She stated that importance of dams can be seen from the duties assigned to SDSO and Dam owners as mentioned in the Act. She stressed upon the need to ensure adequate funds & manpower for maintenance of dams and to fully comply with the provisions of Dam Safety Act, 2021.

Chairman, then requested Shri Sarbjit S. Bakshi, Director, NDSA Secretariat to make a brief presentation on Dam Safety activities in India and then to take up the agenda items for deliberations. The power point presentation of Director, NDSA Secretariat was followed by presentations by each of the participating States/UT of the Western region on the circulated agenda points. The following points emerged from the deliberations.

1. STATE/UT-WISE STATUS ABOUT SPECIFIED DAMS

(as per criteria stipulated in Dam Safety Act, 2021)

The State/UT-wise status about the number of existing specified dams and those under construction, including their ownership, were presented by all the States, NHDC Ltd. and SSNN Ltd. in their power point presentation made during the meeting, which were deliberated at length.

The number of specified dams stated during the presentation were found to significantly vary in respect of two States viz. Maharashtra and Madhya Pradesh, in comparison with the number of dams mentioned in the National Register of Large Dams, 2019. The Head of SCDS and SDSO of these two States were asked to immediately examine the matter on priority and clarify to NDSA about the list of existing specified dams and under construction specified dams latest by **30th November 2022**.

It was decided that the Head of SDSO of all the States/UTs shall compile and tabulate the details of all the specified dams in their State/UT in the format as circulated with the Agenda Note (enclosed here as Annexure - II) and communicate the same officially to Member (Technical), NDSA & Chief Engineer-Design(N&W), CWC, Sewa Bhawan, 8th Floor (S), R.K.Puram, New Delhi as well as NDSA Secretariat, latest by **30th November 2022**.

(Action: Head of SDSO/SCDS of States/UTs)

2. STATUS ABOUT NOTIFICATION OF SCDS AND SDSO:

(Post enactment of the *Dam Safety Act, 2021*)

In the Western Region, all the States have notified SCDS and SDSO.

The Chairman, NDSA urged all the States to convene the first meeting of SCDS **within 15 days** from the date of the meeting and report to NDSA.

(Action: Chairman SCDS of all States/UTs)

3. DAM SAFETY UNIT:

The States/UTs by and large informed that Executive Engineers, Assistant Engineers, Junior Engineers along with other supporting technical/non-technical staff are posted and made responsible for operation and maintenance of each specified dam, which form the Department's Dam Safety Units. The State of Maharashtra & Madhya Pradesh informed that they did not have adequate manpower for deputing exclusively on each dam in view of large number of dams in their States, hence officers were given additional responsibility of two to three specified dams.

Member (Policy & Research), NDSA Secretariat reiterated that as per the provisions of the Act, adequate competent level of engineers is required in the Dam Safety Unit for each specified dam. The Head of SDSO shall take up this matter with their respective State/UT Government to ensure that a robust Dam Safety Unit is functional in respect of every specified dam under the Operation and Maintenance Establishment.

(Action: Head of SDSO of States/UTs, Dam Owners)

4. STATE DAM SAFETY ORGANISATION

The SDSO of States/UTs presented the activities initiated by them in accordance with the provisions of the Act. Director, NDSA Secretariat conveyed that the dam owners and SDSO have a huge mandate to fulfill under the Act for ensuring safety of dams. He conveyed that as per the Act, nothing contained therein shall be construed to absolve an owner of a specified dam of the duties, obligations or liabilities incidental to the construction, operation, maintenance and supervision of the dam or reservoir.

Chairman, NDSA conveyed to the Heads of the State Committee on Dam Safety, State Dam Safety Organisation and dam owners to take all requisite actions and perform all the functions timely as mandated under the Act.

(Action: Head of SCDS & SDSO of States/UTs, Dam Owners)

5. SAFETY, INSPECTION AND DATA COLLECTION:

As per the information submitted by the States in the Western Region, the pre-monsoon inspections of 2474 dams out of 3845 existing specified dams (as per NRLD 2019) in Western region States have been completed as per the distribution given in **Table-1**. It was informed by the SDSO/dam owners that the remaining dams would be inspected soon.

Chairman, NDSA emphasized that the Western region has around 70% of the country's total specified dams and the region is found wanting in completing the inspections. Director, NDSA Secretariat mentioned that all the inspection reports have not been received from SDSO/dam owners in NDSA, which needs to be expedited. It has been observed that some of the dam owners were not carrying out the inspections in the format/as per the checklist as finalized & circulated by CWC for inspections of dams. The States were directed to follow unified procedure for pre and post monsoon inspection of the dams by adopting the format circulated by CWC.

Table – 1

Sl. No.	States/UT	Total No. of Large Dams completed (As per NRLD, 2019)	Nos. of Dams Inspected as reported by States
1	Goa	5	3
2	Gujarat	620	632
3	Madhya Pradesh	899	357
4	Maharashtra	2117	1270
5	Rajasthan	204	212
	Total	3845	2474

Chairman, NDSA directed the dam owners to ensure that the post monsoon inspections of the specified dams are completed latest by **31st Dec 2022** in the circulated CWC format and the report shall be submitted to SDSO and NDSA Regional Director, Pune. The SDSO shall further examine the report and present a gist of their analysis categorizing the dams in Category I, II & III as per the CWC check list/ format for inspections of dams to Member (Technical), NDSA, New Delhi and NDSA Secretariat.

Director, NDSA Secretariat mentioned that all activities related to Dam Safety, Inspection and Data collection stipulated under chapter VII of the Act need to be complied with by the dam owners/SDSO.

(Action: Head of SDSO of States/UTs, Dam Owners)

6. ANNUAL REPORT:

It was decided that all the SDSO's shall prepare and submit the annual report containing the documentation of activities in relation to Dam Safety as per relevant sections of the Act which is to be laid by the State Government in the house of State Legislature. A copy of the same shall be forwarded to the Member (Disaster & Resilience), New Delhi. Member (Disaster & Resilience), NDSA and Chief Engineer (NW&S), CWC shall prepare a consolidated Annual Report for the entire country for which States shall submit the documentation as and when sought by NDSA. A format for preparation of Annual Report shall be circulated to all States/UTs/CPSUs/agencies by Member (Disaster & Resilience), NDSA, latest by **31st December 2022**.

(Action: All SDSOs / Member (Disaster & Resilience), NDSA)

7. CREATION OF NATIONAL LEVEL DATA BASE OF DAMS:

CWC had compiled from the States/UTs/dam owners the information on the large dams in India and published as a National Register of Large Dams (NRLD) in Oct 2019. After enactment of the Act, NDSA has asked the States/UTs to update the details on the specified dams.

In order to compile basic information regarding the specified dams, a form is enclosed as **Annexure-II**. The form shall be got filled up by the dam owners, and after examination, the Head of SDSO shall sign and submit the same to the Regional

Director, NDSA, Pune and Member (Technical), NDSA, New Delhi latest by **30th November,2022.**

(Action: Head of SDSO of States/UTs, Dam Owners)

8. LOG BOOK:

The Member (Policy & Research), NDSA informed that all SDSOs have to maintain a log book or database for each specified dam under their jurisdiction recording therein all activities related to the surveillance and inspection, and all the important events related to dam safety. It was further conveyed that till such time regulations are finalized by NDSA, available CWC guidelines may be followed.

During the meeting, the presentations of the States revealed that manual entries are being recorded in some form in a register by some of the dam owners. These log books were prima facie pertaining to reservoir water level and meteorological information. However, no systematic recording of dam safety parameters and O&M details were being done.

Chairman, NDSA directed all the SDSOs and dam owners to ensure that a logbook is maintained in respect of all the specified dams wherein all the requisite dam safety parameters, O&M details are recorded. This should preferably be in a digital format. The information so recorded should be available at the headquarter of the SDSO on daily basis, for centralized monitoring by SDSO.

(Action: Head of SDSO of States/UTs, Dam Owners)

9. INSTRUMENTATION, EMERGENCY ACTION PLAN (EAP) AND DISASTER MANAGEMENT, OPERATION AND MAINTENANCE MANUAL:

Some of the States informed that they were recording the instrumentation data in the functional instruments in the specified dams. However, in the non-instrumented dams, States stated that it is difficult for them to draw instrumentation plan as they did not have the in-house expertise in this field. Also, some of the States informed that they were not in a position to prepare the EAP on their own due to lack of expertise and want of experts. Some of the States informed that they had prepared O&M manual in-house for

certain specified dams which are being used to operate the Gates. NHDC Ltd. mentioned that the EAP, DM and O&M Manuals are in place in respect of their dams.

JS (RD & PP) urged the Heads of SDSOs and dam owners to take necessary actions and facilitate the dam owners to comply with the provisions of the Act. The States/UTs were requested to upload the EAP/O&M/DM documents on the DHARMA portal & to share with the other States/UTs for lateral capacity building in the country. Member (Policy & Research), NDSA stated that login credentials for DHARMA portal would be provided to all the dam owning States/UTs.

Chairman, NDSA informed that CWC will shortly publish a Manual on Instrumentation of dams which would be useful to the dam owners and SDSO. The States were also requested to share the details of the consultants engaged by them for preparation of EAP for benefit of other States/UTs. The States/UTs were informed that CWC has also published the “*Guidelines for Developing Emergency Action Plan for Dams*” under the DRIP I scheme which can be referred. The same can be accessed through CWC website on the link for DRIP. It was suggested that the existing O&M Manuals at the project sites need to be updated as per the “*Guidelines for preparing O&M Manuals for Large Dams*” and Rule curves are to be prepared/updated for the specified dams. The States/UTs were informed that the guidelines available on CWC web site are tabulated in **Table-2**.

(Action: Head of SDSOs/Dam Owners, Member (Disaster & Resilience), NDSA)

Table - 2

Guidelines And Manuals	
 Guidelines for Selecting and Accommodating the Inflow Design Floods for Dams	Doc. No. CDSO_GUD_DS_06_v1.0 June 2021
Operational Procedures for Assessing and Managing Environmental Impacts in Existing Dam Projects	Doc. No. CDSO_Gud_DS_08_V1.0 November 2020
Guidelines for Classifying the Hazard Potential of Dams	Doc. No. CDSO_Gud_DS_09_V1.0 November 2020
 Manual for Assessing Hydraulic Safety of Existing Dams - Volume I	Doc. No. CDSO_MAN_DS_04_v1.0 June 2021
 Manual for Assessing Hydraulic Safety of Existing Dams - Volume II	Doc. No. CDSO_MAN_DS_04_v1.0 June 2021
Manual for Assessing Structural Safety of Existing Dams	Doc. No. CDSO_MAN_DS_03 November 2020
Handbook for Assessing and Managing Reservoir Sedimentation	Doc. No. CDSO_GUD_DS_04_v1.0 February 2019
Inspection Manual for Dam Field Engineers after Seismic Events, Maithon Dam, Damodar Valley Corporation, Jharkhand	Doc. No. CDSO_MAN_DS_05_v1.0 February 2019
Guidelines for Assessing and Managing Risks Associated with Dams	Doc. No. CDSO_GUD_DS_10_v1.0 February 2019
Technical Specifications of Hydro-meteorological, Geodetic, Geotechnical and Seismic Instruments	Doc. No. CDSO_TS_DS_01_v1.0 January 2018
Inspection Manual for Dam Field Engineers After Seismic Events, Ichari Dam, Uttarakhand	Doc. No. CDSO_MAN_DS_01_v1.0 January 2018
Manual for Rehabilitation of Large Dams	Doc. No. CDSO_MAN_DS_02_v1.0 January 2018
Guidelines for Safety Inspection of Dams	Doc. No. CDSO_GUD_DS_07_v1.0 January 2018
Guidelines for Mapping Flood Risks Associated with Dams	Doc. No. CDSO_GUD_DS_05_v1.0 January 2018
Guidelines for Preparing O&M Manuals for Dams	Doc. No. CDSO_GUD_DS_03_v1.0 January 2018
Guidelines for Instrumentation of Large Dams	Doc. No. CDSO_GUD_DS_02_v1.0 January 2018
Guidelines for Developing Emergency Action Plan (EAP) for Dams	Doc. No. CDSO_GUD_DS_01_v2.0 February 2016

10. HYDRO-METEOROLOGICAL STATIONS, EARLY WARNING SYSTEM, SEISMOLOGICAL STATIONS:

It was seen that few States have established hydro-meteorological stations in the vicinity of some of the specified dams and Early Warning System (EWS) for some of the dams. However, other States/dam owners stated they need to install EWS for their dams. SDSOs/dam owners were requested to take appropriate actions for establishing these stations at the earliest as per the provision of the Act.

(Action: Head of SDSOs/Dam Owners, Member (Disaster & Resilience), NDSA)

11. RISK ASSESSMENT STUDIES, ASSESSMENT OF VULNERABILITY OF DAMS AND HAZARD CLASSIFICATION, COMPREHENSIVE DAM SAFETY EVALUATION:

Member (Regulation), NDSA Secretariat requested the States/dam owners to present the actions taken by them in regard to risk assessment studies, vulnerability assessment and hazard classification of dams as well as comprehensive dam safety evaluation. Most of the States expressed that these studies have not been conducted for most of their dams, primarily due to lack of system expertise and want of expert individuals/agencies in the desired field for carrying out these studies. It was informed

that the existing Guidelines published by CWC under the DRIP Phase I Scheme could be followed till such time the Regulations are in place. He added that as these studies are to be carried out in a time bound manner as per the Act, expeditious actions need to be taken by SDSO/Dam owners.

Member (Technical), NDSA suggested SDSOs/dam owners to immediately prepare a road map for carrying out these studies in respect of their dams and share the details of the independent panel of experts/ organizations which the States/UTs/CPSUs are considering for engaging for carrying out these studies. The Chairman, NDSA informed that training on Rapid Risk Assessment of Dams is being organized by World Bank and CWC soon for which the States/UTs have been requested to nominate their officers.

(Action: Head of SDSOs/Dam Owners, Member (Regulation), NDSA)

12.RECORD OF MAJOR DAM FAILURES IN THE STATE/UT:

Member (Disaster & Resilience), NDSA requested SDSO/Dam owners to maintain a record of major dam incidents of each specified dam under their jurisdiction, and make available to NDSA, information as and when sought. The SDSO shall report the event of any dam failure under their jurisdiction to Member (Technical), NDSA and any other information sought by NDSA in this regard.

(Action: Head of SDSOs/Dam Owners, Member (Technical), NDSA)

13.COORDINATION AND OVERALL SUPERVISION OF REHABILITATION PROGRAMS BEING EXECUTED IN THE STATES THROUGH CENTRALLY OR EXTERNALLY AIDED FUNDING:

The participating States in DRIP also made a brief presentation about the activities undertaken in the DRIP-I programme and the ongoing activities under DRIP-II & III Programme. The rehabilitation and improvement works being carried out by them and the stage of award of new works were presented.

JS (RD&PP) advised the participating DRIP States to expedite the activities and make full utilization of the financial allocations made against each of the State.

(Action: Concerned DRIP Implementing Agencies; Member (Disaster & Resilience), NDSA)

14.LIST OF INDIVIDUAL EXPERTS IN DAM SAFETY ENGINEERING IN THE STATE/UTS AND OF AGENCIES FOR INVESTIGATION, DESIGN, CONSTRUCTION AND ALTERATION OF THE SPECIFIED DAMS:

The Heads of SCDS/SDSO/Dam Owners/CPSUs were requested to provide a list of names with resume of individual Experts (retired/freelancers) and Consultancy agencies in the field of Dam Safety Engineering and related aspects as available with them and also the names of executing agencies which have proven track record of successfully executing dam rehabilitation and related works. NDSA shall generate a country-wide database which should serve as a reference for NDSA and SDSO activities/studies/assignments. The first list of individual experts along with their bio-data and list of suitable agencies along with their credentials may be made available to NDSA Secretariat latest by **15th December 2022**. The Regional Directors of NDSA shall coordinate with the heads of SCDS and SDSO to expedite the inputs to NDSA Secretariat.

(Action: Head of SCDS/ SDSOs/Dam Owners/Regional Directors of NDSA/NDSA Secretariat)

The Regional Meeting-cum-Workshop ended with thanks to the Chair and all the participants.

Annexure-I

List of Participants for Regional Meeting-cum-Workshop of Western Region of the National Dam Safety Authority held at Pune on 11.11.2022

NDSA Members

- 1 Sh J Chandrashekhar Iyer, Chairman, NDSA and Member (D&R), CWC.
- 2 Ms Richa Misra, Member (Admin & Fin), NDSA And JS & FA, MoJS
- 3 Sh Vijai Saran, Member (Policy & Research), NDSA & Chief Engineer, DSO, CWC
- 4 Sh Vivek Tripathi, Member (Regulation), NDSA & Chief Engineer-Design (E&NE), CWC
- 5 Sh Anil Jain, Member (Disaster & Resilience), NDSA and Chief Engineer-Design (NW&S), CWC

NDSA Secretariat

- 6 Sh Sarbjit Singh Bakshi, Director, NDSA Secretariat and Director, CWC

Special Invitees

- 7 Sh Anand Mohan, Joint Secretary (RD&PP), DoWR, RD & GR, MoJS
- 8 Sh. Sushil Kumar, Chief Engineer, NWA, CWC, Pune
- 9 Sh. Dharendra Kumar Tiwary, Chief Engineer, MCO, CWC, Nagpur
- 10 Sh. Manoj Kumar, Sr. Joint Commissioner (PR Wing), DoWR, RD & GR
- 11 Sh. Harish Umbarje, Director, Western Region NDSA & Mon Dte, MCO, Nagpur

States/CPSUs

- 12 Sh Sudarshan Pagar, Chairman SDSO & Chief Engineer, Hydrology & Dam Safety, Maharashtra
- 13 Sh Mahendra Amle, Superintendent Engineer, SDSO, Maharashtra
- 14 Sh Nilesh Dusane, Executive Engineer SDSO, Maharashtra.
- 15 Sh Shashank Gaikwad, Deputy Engineer SDSO, Maharashtra.
- 16 Sh Ankush Gaunkar, Chairman, SE, SDSO, Goa
- 17 Sh Ram Gauns, Mentor, SDSO (EE), Goa
- 18 Sh S B Prajapati, Chief Engineer (Design) S S N Nigam Ltd, Gujarat
- 19 Sh R J Shah, Executive Engineer, Sardar Sarovar Narmada Nigam Ltd, Gujarat
- 20 Sh K. A. Patel Chairman SCDS and Secretary, Water Resources, Gujarat
- 21 Sh M. D. Patel, Chairman SDSO, Chief Engineer (North Gujarat) & Additional Secretary, Water Resources, Govt. of Gujarat.
- 22 Sh B.H. Joshi Superintending Engineer, SDSO, Govt. of Gujarat
- 23 Sh Madan Singh Dawar, Engineer in chief, WRD, Bhopal, Madhya Pradesh
- 24 Sh Anil Singh, Director Dam Safety and Chief Engineer Ujjain, Madhya Pradesh
- 25 Sh Ramavtar Tiwari, Chief Engineer, Bodhi, WRD Bhopal, Madhya Pradesh
- 26 Sh Shashank Shukla, General Manager, NHDCL, Madhya Pradesh
- 27 Sh Sanjeev Yadav, Senior Manager, NHDCL, Madhya Pradesh
- 28 Sh Manish Parihar, Director Dam, Rajasthan

SALIENT INFORMATION OF EACH SPECIFIED DAM

The following *Salient Information* shall be provided in *HARD COPY* and *SOFT COPY* by each dam owner through *State Dam Safety Organization* on each specified dam under its jurisdiction:

S.No.	Information
1	Name of the State or UT in which the Dam is Located
2	Name of the Dam
3	Full Address of the Dam
	Latitude: _____ °N Longitude: _____ °E
4	Name of the Dam Owner
5	Full Address of the Dam Owner
6	Commissioning of the Dam
	Date of Commissioning of the Dam : _____
7	Material with which the Dam was Constructed
8	Salient Features of the Dam
	Height (m) (above deepest foundation level) : _____
	Length of the crest (m) : _____
	Bottom width (m) : _____
	Top width (m) : _____
	Capacity of the reservoir (in m ³)
	(a) Active Storage : _____
	(b) Dead Storage : _____
	Max Flood Discharge (in m ³)
	(a) Design Flood : _____
	(b) Observed Flood : _____
	Specially difficult Foundation problems : Yes or No
	Unusual Dam Design : Yes or No
9	Inspection Galleries in the Dam
	Number : _____
	Elevation of Galleries (m) : _____
	Are all Galleries Dry? : Yes or No

10	Gates	
	Method of Operation of Gates	: <i>Hydraulic or Electric</i>
	Size of each Gate	:
	Number of Gates	:
	Number of Gates in working condition	:
11	Operation & Maintenance Manual	: Yes or No
	Was an <i>Operation & Maintenance Manual</i> prepared?	: Yes or No
	If No , by when is the same likely to be prepared?	
12	Silting of Reservoir	
	Does the Reservoir get silted?	: Yes or No
	If Yes , what percentage of the reservoir capacity is lost?	:
13	Leakage through the Dam Body	
	Peak Water leakage (<i>in m³</i>)	:
14	Structural Safety Assessment	
	Was <i>Structural Safety Assessment</i> performed?	: Yes or No
	If Yes , was the Dam found to be safe?	: Yes or No
	If No , was the Dam retrofitted?	: Yes or No
	If Yes , when was it retrofitted?	:
	If Yes , what was the retrofit measure adopted?	:
15	Dam Break Analysis	
	Was <i>Dam Break Analysis</i> performed?	: Yes or No
	If YES , were <i>Disaster Management Plans</i> prepared?	: Yes or No
16	Emergency Action Plan	
	Was an <i>Emergency Action Plan</i> prepared?	: Yes or No
	If Yes , was it shared with the SDMA and DDMA?	: Yes or No