

Hatnur Major Project

Natural Calamity Flood Preventive Solutions

There is a Ware (Dam) consisting 41 curved doors near Hatnur village near Bhusawal City. The Level of the Hatnur Dam is 214 Meters & water storage capacity is 388.TMC. The floodwater coming up to the month of August does not stored in the Hatnur Dam. The Central Water Commission has its own active wireless system at Hatnur, Bhusawal, Savkheda & Amalner on the Tapi River. The Jalgaon Irrigation Department has its own active wireless system at Jalgaon, Yawal, Padlase Tal. Yawal, Chopda, Dhanora, Mangrul, Hated, Chahardi, Adawad & Ghodgaon Tal. Chopda. The floodwater discharging capacity of the curved doors of the Hatnur dam is 9.33 lacs Cusecs.

Hatnur Dam Control System

Designation	Name	Contact Numbers		
		Off	Resi	Wireless
Executive Engineer, Jalgaon Irrigation Department	Shri. S. B. Joshi 94222261938	2238869	223348 3	2233914
Sub Divisional Engineer Irrigation Sub Division Savda	Shri. Y. P. Barhate	-	-	277044
Sub Divisional Engineer Irrigation Sub Division Yawal	Shri. S. B. Chaudhari	-	-	-
Sub Divisional Engineer Irrigation Sub Division Chopda	Shri. S.F.Gawit	220126	-	-

List of villages affected by the flood water of Hatnur Dam.

(As per Emergency Action Plan)

Hatnur Dam to Tapi-Waghur confluence

Left Bank	Right Bank
1) Hatnur Taluka Bhusawal	1) Lumkheda Taluka Raver
2) Pimpri sek Taluka Bhusawal	2) Taskheda Taluka Raver
3) Kandari Taluka Bhusawal	3) Rangaon Taluka Raver
4) Savtar Taluka Bhusawal	4) Gahukheda Taluka Raver
5) Nimbhora Taluka Bhusawal	5) Raipur Taluka Raver
6) Tapat Kathora Bk & kh Taluka Bhusawal	6) Kathora Pra Savada Taluka Raver

Villages like to be affected due to the Backwater of Hatnur Dam

(A) Resettled villages as per original project report

Taluka Bhusawal	Taluka Muktainagar	Taluka Raver
1) Tahakali	1) Mehun	1) Golwade
	2) Chinchol	2) Tandalwadi
	3) Changdeo	3) Shingadi
	4) Kothali	4) Kandwel
	5) Uchande	5) Singat
	6) Khamkheda	6) Puri
	7) Melsangave	
	8) Shemalde	
	9) Panchane	
	10) Mendhalade	
	11) Muktai Nagar (Minor)	

(B) Resettling villages as per Gole committee

Taluka Muktainagar	Taluka Raver
1. Chinchkheda	1. Nimbol
2. Medhode	2. Bohardi
3. Ghodasgaon	3. Ajnad
4. Kund	4. Patodi
5. Pimpri Nandu	5. Ainpur
6. Anturli Minor	
7. Dhamande Minor	

(C) Villages Resettling Second Time as per Gole committee

Taluka Muktainagar	Taluka Raver
1. Muktai Nagar	1. Tandalwadi
	2. Shingadi
	3. Kandwel

The constructions & crops in the following villages were damaged in the flood came in 1978. Hence these villages may be affected by flood.

Taluka Raver

- 1) Nimbhora sim
- 2) Therole
- 3) Khirwad

Taluka Muktai Nagar

- 1) Belaswadi
- 2) Naygaon

List of villages situated at upper side of the Dam & near Tapi & Purna River Banks is given below. Perhaps these villages will be in danger due to the flood coming once in 100 years.

Tapi River

Raver Tehsil	Muktai Nagar Tehsil	Barhanpur Tehsil Dist. Khandwa
1.Mangalwadi	1.Kothe	1.Nagulkheda
2.Bhamalwadi	2.Kalaskheda	2.Gadhana
3.Kolode	3.Narwel	3.Badkheda
4.Sulwadi	4.Bhokari	4.Pipala
5.Sangave		5.Nachankheda
6.Vitave		6.Waroli
7.Dhulkheda		
8.Nehete		
9.Dodhe		
10.Atwade		

A) Purna River

Muktai Nagar Tehsil	Malkapur Tehsil Dist. Buldhana
1.Manegaon	1.Dodhalgaon
2.Dodha Dodhe	2.Chinchkheda
3.Somangaon	3.Waghoda
4.Nandwel	4.Nimkheda
	5.Korwad
	6.Chincholi
	7.Jamathi
	8.Nakhel
	9.Hingana
	10.Nagapur
	11.Isarkheda
	12.Therola
	13.Korhala
	14.Raygaon

List of villages beside Hatnur Project near Tapi River

Left Bank			Right Bank		
Sr. No.	Village	Tehsil	Sr. No.	Village	Tehsil
1	Hatnur	Bhusawal	1)	Udhali Bk	Raver
2.	Savtar		2)	Lumkheda	
3.	Nimbhora Kh		3)	Taskheda	
4.	Kathora Kh		4)	Rangaon	
5.	Kathora Bk		5)	Gahukheda	
6.	Pimpri Sekam		6)	Raipur	
7.	Kandari		7)	Sudgaon	
8.	Bhankheda		8)	Duskheda	Yawal
9.	Shelgaon	Jalgaon	9)	Kasawe	
10.	Kanaswade		10)	Kathora	
11.	Bholane		11)	Aklood	
12.	Deulwada		12)	Anjale	
13.	Sujade		13)	Waghlud	
14.	Nandre		14)	Borawal	
15.	Khaparkhede		15)	Takarkheda	
16.	Dhamanagaon		16)	Bhalshiv	
17.	Turkheda		17)	Pimpri	
18.	Turkheda		18)	Pilode	
19.	Awar		19)	Thorgavan	
20.	Diksai		20)	Pathrale	
21.	Ridhur		21)	Shiragad	
22.	Amoda		22)	Kolnhavi	
23.	Garadi		23)	Bamrud	
24.	Dhanora		24)	Pungaon	Chopda
25.	Karas		25)	Matana	
26.	Savkheda		26)	Mitawali	
27.	Kinod		27)	Pimpri	
28.	Bhadali		28)	Vadgaon Bk	
29.	Bhokar		29)	Vadgaon Kh	
30.	Palsod		30)	Narwel	
31.	Tarade		31)	Vatar	
32.	Dhurkheda		32)	Sutkar	
33.	Nanded	Amalner	33)	Khedi	
34.	Hingone Kh		34)	Bhokari	
35.	Kalali		35)	Wadgaon	
36.	Dodhwad		36)	Wadgaon sim	
37.	Bohare		37)	Kolambe	
38.	Nimb		38)	Kathora	
39.	Dhawade		39)	Kurwel	
40.	Savkheda		40)	Tawase	
41.	Mungase		41)	Khachane	
42.	Dapori		42)	Nimgavan	
43.	Rachandi		43)	Tandalwadi	

44.	MathGavan		44)	Mod Bk	
45.	Morkheda		45)	Vichkheda	
46.	Khaparkheda		46)	Anwarde	
47.	Gangapuri		47)	Budhgaon	
48.	Jalod		48)	Awadati	
49.	Hingonasim		49)	Tilkheda	
			50)	Malegaon	
			51)	Nimkheda	
			52)	Shendani	
			53)	Walaki	
			54)	Vitner	
			55)	Khapare	
			56)	Waghora	
			57)	Vichkheda	
			58)	Dondwade	
			59)	Ghadwel	
			60)	Dhupe Kh	

List of villages to whom danger alarm is to be given for Hatnur Dam Storage.

Muktai Nagar Tehsil	Raver Tehsil	Bhusawal Tehsil
Mehun	Tanadalwadi	Tahakali
Chinchol	Singat	
Kothali	Singadi	
Muktai Nagar	Puri	
Changdeo	Golwade	
Kund	Ainpur	
Ghodasagaon	Nimbol	
Panjane	Vitave	
Medhode	Bodardi	
Shemalade	Ajnad	
Khamkheda	Patondi	
Pimpri	Mangalwadi	
Anturli	Sulwadi	
Dhamande	Therole	
Medhode	Bhambarwadi	
Chinchkhed	Kandwel	
Kelaswadi	Kelode	
Nasgaon	Nimbhorasim	
Mel Sangave	Khirwad	
Panchane		

**List of villages below the Hatnur Dam to whom danger alarm is to be given
for Dam Storage.**

Bhusawal Tehsil	Raver Tehsil	Yawal Tehsil
Hatnur	Udhali	Kathora
Savtar	Lumkheda	Duskheda
Nimbhora	Rangaon	Kasawa
Tapat Kathora	Gahukheda	
Kandari	Raipur	
Pimpri Sekam	Sudgaon	
	Taskheda	

**STATEMENT SHOWING THE INDICATING MARAS DESCRIBING
RESPONSIBILITY OF VARIOUS OFFICERS**

Sr. No.	Name of Officers	Para Nos.
1	The Collector, Jalgaon	4.5, 5.1, 5.2, 6.3, 11.4, 12.4
2	Tahasildar, Yawal	4.0, 4.2, 4.3, 4.4, 4.5, 4.6, 11.2
3	Tahasildar, Raver	4.0, 4.2, 4.1, 4.4, 4.5, 4.6, 11.2
4	Tahasildar, Bhusawal	4.0, 4.2, 4.3, 4.4, 4.5, 4.6, 11.2
	POLICE DEPARTMENT	
1)	The D.S.P. Jalgaon	5.0, 5.1, 5.2, 11.3, 12.5
2)	The Sub Inspector of Police, Sawada	5.2, 10.2, 11.2, 11.3, 11.6
3)	The Sub Inspector of Police, Yawal	5.2, 10.2, 11.2, 11.3, 11.6
4)	The Sub Inspector of Police, Varangaon	5.2, 10.2, 11.2, 11.3, 11.6
5)	The Sub Inspector of Police, Bhusawal	5.2, 10.2, 11.2, 11.3, 11.6
	ZILLA PARISHAD	
1)	The Chief Executive Officer, Jalgaon	6.1, 6.2
	Irrigation and Power Department	
1)	The Superintending Engineer & Adminsitrator, C.A.D.A. Jalgaon	2.1, 11.5
2)	The Executive Engineer, Jalgaon Irrigation Division	1.1, 1.2, 2.1, 2.2, 4.3, 3.1, 4, 7.0, 7.1, 7.2, 8.00, 8.1, 8.1, 9.2, 9.2, 9.3, 9.4, 10.8, 10.1, 10.2, 11.5, 12.00, 12.1, 12.2, 12.3
3)	The Deputy Engineer, Irrigation Sub Division.	1.1, 1.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.5, 3.5.1, 3.5.2, 3.5.2, 7.0, 7.1, 7.2, 8.00, 8.1, 8.2, 9.00, 9.1, 9.2, 9.3, 10.0, 10.1, 10.6, 11.7, 11.8, 12.00, 12.1, 12.2, 12.3, 3.2, 3.2.1, 3.2.2, 3.4, 3.4.1, 3.4.2, 3.1.3, 3.1.4, 3.3, 3.3.1, 3.32

EMERGENCY ACTION PLAN

OF HATNUR MAJOR PROJECT

1.0 INTRODUCTION:-

1.1 Construction of a composite dam comprising of 717 m. long masonry dam and 1663 m. earth dam on river Tapi 20 Km. away from Bhusawal in Jalgaon District is completed in 1982.

1:2 The designed gross storage of water at dam is 388 Mcum.

1:3 It is decided to take pre cautionary measures in the event of danger to dam.

2.0 ESTIMATE OF FLOOD AFFECTED AREA:

2:1 There will be unprecedented heavy floods affecting large area in down stream in case of breach of dam. Survey of Tapi River was done from Hatnur dam upto influence of Waghur River with Tapi.

2:2 The assumption as regards flood discharge hydraulic calculations etc. are adopted as worked out and recommended by the central design organization. The discharge considered at various locations on down stream of dam are worked out as under.

At every 500 m interval.

a) The design discharge from weir plus the Inglis flood from the catchment from dam site the point of cross section.

b) Goles discharge i.e. 17.00 lakh cusecs at dam site plus the check flood discharge from the catchment from dam site to the point of cross section.

2:3 The area and villages likely to be affected by floods on Down stream of Hatnur Dam are shown on the Drawing reproduce from toposheets

2:4 Life of villages likely to be affected is enclosed in enclosure No.1

Emergency action planning for Hatnur Dam in the event of danger to Dam. the retaining .

1.0 Inspection by officers.

1.1 Persons responsible .

i) The Sub-Divisional officer, Irrigation sub-division Sawada.

ii) The Executive Engineer, Jalgaon Irrigation Division, Jalgaon.

1.2 ACTION TO BE TAKEN:

i) S.D.O. Sawda, Irrigation sub-division should stay at Dam site through out the monsoon for daily intensive inspection of the Dam.

ii) The Executive Engineer, should complete his routine premonsoon inspection.

- iii) During monsoon period the Executive Engineer, Jalgaon Irrigation Division, Jalgaon will ensure that either he or the deputy Engineer, Irrigation Sub Division will be at the Dam site.

The Executive Engineer, should carryout Inspection of all the spillway gates, outlet gates and their component parts during the pre-monsoon inspection and see that everything is in the perfect working order. He should also take frequent trials of the gate operation.

He should carry out inspection when flood level raises to R.L. 212.00 at Hatnur dam. He should camp continuously at Dam site whenever the flood depth over weir is more than 10” (3.05 m)

2.0 Supply of flood maps.

2.1 PERSON RESPONSIBLE :

- i) Executive Engineer, Jalgaon Irrigation Division, Jalgaon.
- ii) Super Engr. & Administrator, C.A.D.A. Jalgaon.

2.2 ACTION TO BETAKEN :

Flood map on toposheet drawing the approximate flood lines down stream of dam in the event of breach of dam, when Inglis flood is passing over the spillway will be prepared by the Executive Engineer, Jalgaon Irrigation Division, Jalgaon for the portion mentioned below.

HATNUR DAM TO WAGHUR RIVER CONFLUENCE :

The villages coming under Hatnur /Waghur Zone will fall under two categories as ‘A’ and ‘B’.

Category ‘A’:- Villages which are situated on the banks of river of within 0.75 Km. from the river bank.

Category ‘B’:- Villages which are within the flood zone but more than 0.75 Km. from the river banks- Nil

THE MAPS SHOULD SHOW A LIST OF :-

- a) Village likely to be affected by flood falling under category ‘A’
- b) Village likely to be affected later on and those which will fall under ‘B’ category.
- c) List of road liable to be submerged should be attached to the flood map.
- d) Special installation coming under flood zone.
- e) List of public properties such as Railways, Bridges inspection Bungalows coming under flood zone.

f) Safe places where the villages should find shelter in the event of high flood (this should be indicated on the copies of village maps.)

3.0 Vigilance, observation and maintenance.

3.1 Vigilance, observations.

3.1.1 Person responsible for vigilance and observation.

First shift.

(5 hours to 13 hours)

Second shift

(13 hours to 21 hours)

Third shift

(21 hours to 5 hours)

The Deputy Engineer, Sawada Irrigation Sub Division, Sawada. will visit the site and check all the observation as mentioned in(i) to (vii) under para 3.1.2

Special attention should be given to these observation when the level rises above R.L.212.00 for the first time.

3.1.2 LIST OF THE OBSERVATIONS TO BE DONE

i) Flood levels :- Flood level should be recorded every half an hour in the gauge book and report should be made to be the Deputy Engineer, Sawda Irrigation Sub-Dn. Sawada when the water level reaches to R.L. 212.00m.

Gauge observation should be taken at regular and closer Interval to have correct estimation of peak flood. The observation should be taken by the person not below the rank of Jr. Engineer/Sub Overseer, The Deputy Engineer, Sawda Irrigation Sub-Division, Sawda should check the gauge observation daily.

ii) Seepage near the junction of device wall and earth dam as regards.

a) Quantity of seepage.

b) Turbidity if any.

c) Disturbance to the loading berm.

d) Seepage on the down stream side any where.

through the earth portion or down stream ground in entire length of the dam, observations should be made as regards quantum of leakage's, turbidity of leakage water, Formation of boil, locations, R.L. of leakage etc.

iii) Surface settlement or appearance of crack any where on the dam.

The Extents of settlement, magnitude or cracks along with location and R.L. of affected are should be noted.

iv) Sliding of the up stream slope or hill slope disturbance to up stream pitching. The location and R.L. of the slide along with the nature of slide should be noted.

v) Seepage through drainage gallery :

Hourly record of the discharge of the pump and level of the water in drainage gallery, should be kept. Report should be made immediately if water level in drainage gallery is in Increasing stage.

vi) Seepage any where through the dam and divide wall should be recorded within following details

a) Location , R.L. of leakage.

b) Quantum of leakage.

c) Color of leakage water.

d) The nature of leakage that is whether in forma jet otherwise.

vii) Disturbance of any part of the Dam.

Note as regards location of affected portion and nature of disturbance should be made.

viii) Piozometric data : No piozometric are installed on Dam site.

3.1.3 The Officer on duty as mentioned in para. 3.1.1. above should not leave the duty place without handing over the work to his reliever even though the normal shift timings are over. Signature of the reliever in token of relief of this predecessor and for taking over should be taken on the register.

3.1.4 No body from the Sawda Irrigation sub Division, Sawda and mechanical staff in charge of gate operation should proceed even on casual leave with-out the written permission of the Deputy Engineer concerned or the executive Engineer, during the period from July to October or as may be stipulated by the Executive Engineer, Jalgaon Irrigation, Dn. Jalgaon.

3.2 Maintenance of the approach road to dam site.

3.2.1 Persons responsible , deputy Engineer, Sawda Irrigation Sub- Division Sawda.

3.2.2 Approach road from left bank to Dam and approach road from colony to dam site or Right side should be mentioned in good condition by the Deputy Engineer, Irrigation Sub- Division Sawda.

3.3 Keeping vehicles ready for an emergency :

3.3.1 Person responsible : Deputy Engineer, Sawda Irrigation Sub-Division, Sawda.

3.3.2 Action to be taken :

- a) Minimum four jeeps should be kept in good working condition.
- b) Minimum 8 or 9 trucks with drivers should be kept ready in working condition from July in a position to resume duty within twenty minutes of the receipt of the instructions, to do so.

3.4 Keeping list of the able bodies persons in the colony.

3.4.1 The person responsible : The Deputy Engineer, Sawda Sub-Division, Sawda.

3.4.2 Action to be taken : A list of minimum 60 nos. of able bodied persons and labour from Hatnur colony should be prepared. Labours and persons should be such as to take any action ordered by the Deputy Engineer in time of emergency.

3.5 Keeping ready empty cement bags and Filter materials.

3.5.1 Persons responsible : Deputy Engineer, Sawda Irrigation Dn. Sawda.

3.5.2 Action to be taken : Following materials should be kept for ready use throughout the monsoon season.

- i) Jutes bags filled with sand, stacked and covered by the tarpaulins on the berm of suitable places.
 - ii) About three hundred cft. of each sand, stone metal and rubble.
- Above materials should be stocked on loading be berm or rock toe.

4.0 Formation of the Flood committee.

4.1 Persons responsible : (1) Tahasildar, Yawal (2) Tahasildar, Bhusawal (3) Tahasildar, Raver, (4) Tahasildar ,Muktainagar (Edalabad.)

The Tahasildar, Yawal and Tahasildar, Bhusawal and Raver/ Edlabad will form village committee immediately in the villages listed in enclosure No. 1 consisting of the following persons.

- 1) Sarpanch of village panchayat.
- 2) Police Patil
- 3) Chairman of Co-operative society.
- 4) President of villages farmer's union if there is any.
- 5) Head Master of village school.
- 6) Gramsevak.

4.2 These village committees should be informed that they are formed for informed the villager to carry out the instruction according to alert and action warning. They should use there own transport available in the village.

The able bodies men and women should carry their belongings by the themselves and olds and children should be taken to the places of safety in the bullock carts available in the village.

- 4.3 The Tahasildar should fix the safe place in consultation with the villagers to which villagers should go on their being asked to evacuate, with their cattle and belongings. The fixing of the places of safety as well as indication of the flood line on the village map, should be done by Executive Engineer, Jalgaon Irrigation Division, Jalgaon and these maps should be supplied to the Tahasildar.
- 4.4 The village flood committees should be informed that these arrangements are precautionary measures and that there is no need to be panicky on account of these precautionary measures.
- 4.5 The village flood committees should arrange and when necessary, for putting up shelters at the places of safety and also for immediate need of food, water, clothing etc. The supply of sheets for shelter will be arranged by the Collector, Through Taluka Tahasildar and be kept at the Control places within easy reach of proposed evacuation centers.
- 4.6 The arrangement made by the Tahasildar to point nos. above should be reported to the Commissioner, Nasik Division, Superintending Engineer & Administrator, Command Area Development Authority, Jalgaon, District Collector, Jalgaon, District Superintend of Police, Jalgaon & Executive Engineer, Jalgaon Irrigation Division, Jalgaon

5.0 Help by Police parties

- 5.1 i) The Collector, Jalgaon
ii) The District Superintend of Police, Jalgaon
- 5.2 Action to be taken : On receipt of alert single, The Collector of Jalgaon may please instruct District Superintend of Police, Jalgaon to send the police help immediately to dam site. At least two police parties each consisting of one head constable and two constables may be sent along with police sub Inspector so that one party can be stationed at dam site and other will move to villages likely to be affected.

6.0 Help by Z.P.

- 6.1 Persons responsible : i) The Chief Executive Officer, Z.P. Jalgaon
- 6.2 Action to be taken : The Chief Executive Officer, Z.P. Jalgaon, should instruct the B.D.O. s and Panchayat Committees to spare jeeps as and when required for the excavation and other relief works. The Chief Executive Officers should issue instruction to all staff to render on help when called for by collector or his sub ordinates.

A copy of instruction issued by the Chief Executive officer should be endorsed to the respective officer, Sub-Divisional Officer and Tahasildar, Executive Engineer,

Jalgaon Irrigation Division, Jalgaon and Administrator command area development authority , Jalgaon

7.0 Action to be taken when water level reaches at R.L. 212.00

7.1 Person Responsible :

- a) Deputy Engineer, Sawda Irrigation sub-division, Sawda inform immediately to the Executive Engineer, Jalgaon Irrigation Division, Jalgaon when the water level reached R.L. 212.00
- b) Round the clock vigilance should be maintained by making special patrolling arrangements if necessary.
- c) The S.D.O. Sawda Irrigation Sub-Dn. Sawda fill post of persons knowing lifting and lowering operation of the spillway gates and action should be taken as per instruction of Executive Engineer, Jalgaon irrigation Division , Jalgaon

8.0 Action to be taken : When any settlement crack is seen through the dam or when the pizometric observation show any alarming conditions as detailed in para No. 3.1.2. sub- para (vii).

8.1 Person responsible : S.D.O Sawda Irrigation sub- division, Sawda.

8.2 Action to be taken : information should immediately be submitted to the Executive Engineer, Jalgaon Irrigation Division, Jalgaon who should visit the site study the situation and take following actions.

- i) Round the clock vigilance should be maintained by making special arrangement.
- ii) Any settlement in the dam should immediately be filled by murum or soil bags.
- iii) Detailed of this occurrence to be reported to the Superintending Engineer & Administrator, Command Area Development Authority, Jalgaon

9.0 Action to be taken in case of leakage.

9.1 Person responsible : i) Deputy Engineer, Sawda Irrigation Sub Division, Sawda.

ii) Executive Engineer, Jalgaon Irrigation Division, Jalgaon

9.2 Action to be taken : If any leakage is noticed record should be kept as regards location and RL quantum of leakage and turbidity of leakage if any on the basis of these observations further action to be taken as under.

- a) If clear water is coming out of the leak the situation is not serious, the discharge should be measured & leakage reported immediately to head quarter to Executive Engineer (If he is not on the site) these report also be

communicated to the administrator, command area development authority, Jalgaon by Telephone.

- b) If turbid water is coming out through a leak the matter is serious and may develop into a dangerous situation. An immediate inspection of the dam should be made to discover whether any settlement. However small and any longitudinal or transverse crack have developed. It should also be observed. Whether any sloughing of the embankment has occurred.

All such occurrence with all facts should be communicated telegraphically (wireless) and by all available means to the Executive Engineer, Jalgaon Irrigation Division, Jalgaon and the Superintending Engineer & Administrator, Command Area Development Authority, Jalgaon In case of break down of telephone and telegraph a special messenger should be sent by Government vehicle to the Executive Engineer, Jalgaon Irrigation Division, Jalgaon to the Superintending Engineer & Administrator, Command Area Development Authority, Jalgaon The Chief engineer, North Maharashtra region, Nasik should also be informed by Telegram and Telephone.9.3 Simultaneously the following action should be taken to deal with the leak.

- 9.3.1 If the seepage is small bowl shaped excavation should be made in the slope of embankment and filter consisting of sand gravel or metal and rubble should be constructed in the excavation as shown in the accompanying sketch P/40 at "A" of the layer of sand should be deposited against leakage face.
- 9.3.2 If the crack is larger there would be no time for excavation & the filter should be built above the embankment slope as shown in the sketch at "B"
- 9.3.3 It should be noted that purpose of filter is to trap the soil particles from the body of embankment. The purpose of filter is to arrest the movement of soil particles. It is, therefore of at most importance that the filter material of correct size as shown in the sketch, should be obtained and stacked in advance near the rear toe of the dam. If after filter is built the turbidity of the seepage flow disappears and if clear water continued the filter has served its purpose.
- 9.3.4 After the filter is successfully built, the fact of having done so, should be communicated telegraphically (By wireless) to executive engineer and administrator, C.A.D.A. and Chief Engineer, North Maharashtra region, Nasik. and joint secretary to Government, Irrigation Department Mantralaya Bombay.

10.0 Alert and De alert single and action warnings.

The Deputy Engineer, Irrigation Sub-Dn. Sawda will inform the Executive Engineer, if there is any occurrence which is likely to involved the dam.

Normally the alert singles are to be issued by the Executive Engineer, Jalgaon Irrigation Division, Jalgaon. In his absence and if he can be contacted the Deputy Engineer Sawda Irrigation Sub. Dn. Sawda will give the alert signal if there is any occurrence, which is likely to cause danger to the dam.

10.1 Method of communicating the messages form Hatnur dam site to Sawda.

The message should be conveyed by the operator to the Sawda by wireless to the deputy engineer, Sawda Irrigation Sub. Dn. Sawda for transmitting the message to other officers. In case the telephone do not work a special vehicle with massager should be sent to Sawda cap Tahakali Deputy Engineer Irrigation Sub- Division Sawda should further give message to the Executive Engineer, Jalgaon Irrigation Division, Jalgaon by through telephone, or by wireless.

10.2 Message from Sawda/ Hatnur Dam to Jalgaon.

The Deputy Engineer, Irrigation sub Division, Sawda on receiving message should communicate the message further to the following officers by (wireless) trunk telephone and telegram on priority basis.

The Deputy Engineer, Irrigation Sub-Division Sawda shall select canal telephone station where arrangement for transmitting message shall be made all the night to the Executive Engineer, Jalgaon Irrigation division, Jalgaon and executive engineer, Jalgaon Irrigation dn. Jalgaon should post regular subordinates in charge of trunk telephones station for twenty four hours. A register should be mentioned.

The special staff and of the Rly. Bridge Likely to be affected.

11.0 Action to be taken in case of danger to dam. After receipt of the alert signal as in para No. 10 above the following action should be taken.

11.1 The operator Udhali should give alert message through the Jr. Engineer in charge to the member of village. Flood committee who should in turn inform all the villagers as per message in enclosure No. III

11.2 On receiving the "ALERT SIGNAL" the Tahsildar, Bhusawal, Raver, Edlabad and Yawal will proceed immediately and camp at a suitable central place in the affected village from where it will be easier to control evacuation of village with the help of circle inspector and talathi under them. Same type of action will be

taken by the Tahasildar of Raver, Bhusawal & Yawal in receipt of alert signal from the Executive Engineer, Jalgaon Irrigation Division, Jalgaon.

The Deputy Engineer, Irrigation Sub- Division Sawda will direct the sub-Inspector of Police to move the Police parties to convey message immediately to the affected villages for immediate evacuation.

The D.S.P. should arrange to post the personal from his department at the stations, Hatnur Dam colony to convey the messages to the central area. Message will be conveyed to these police parties by the Jr. Engineer, stationed at the above places on receipt of the message the D.S.P. Jalgaon will direct the sub- Inspector of Police to move parties to convey messages Immediately to central area.

11.3 On receipt of "Alert Signal" the D.S.P. will inform the Taluka home Guard Commandant simultaneously and instruct him to be in readiness for undertaking evacuation operation, when they become necessary. He will also instruct the sub Divisional Police officer to keep in touch with Revenue sub-divisional officer and remain in readiness for undertaking evacuation operations when necessary.

11.4 The Collector of Jalgaon will remain at Head quarters and exercise over all supervision till receipt of further signal. He will also inform the state Transport authorities to be in readiness to render assistance if required.

11.5 On Receipt of alert signal the Administrator, C.A.D.A. & Executive Engineer will proceed to the Dam site immediately to direct the repair operations.

11.6 The Deputy Engineer, Sawda Irrigation Sub. Dn. Sawda will after transmitting the "Alert Signal" inform the police party to alert the people. He will mobilise the labour according to plan and employ it for efficient and expeditious execution of Repair work.

11.7 He will give hourly message of the precise factual condition of the dam until Dealert signal or a action warning is given to the Canal Phone Operators who will transferred the canal telephone Station at Hatnur colony, Yawal and the Executive Engineer, Jalgaon Irrigation Division, Jalgaon will inform the officers mentioned in para no. 1022 above.

11.8 If as result of repairs the danger is averted the Deputy Engineer will give a "Dealert " signal to the Officers to whom the "Alert " signal was given in the same manner as before.

12.0 Signals for action breach and consequent measurement

12.1 Person responsible :

- 1) Deputy Engineer, Yawal Irrigation sub. Dn. Yawal.
- 2) Executive Engineer, Jalgaon Irrigation Dn. Jalgaon

12.2 If the Executive Engineer, Jalgaon Irrigation Division, Jalgaon is of the opinion that the situation has worsened & breach is apprehended he should give an action signal to the Officers

indicated in paragraph 10.2 as in the case of alert signal if the Executive Engineer, Jalgaon Irrigation Division, Jalgaon is not at dam site and if he cannot be contacted on phone or wireless the Deputy Engineer, Sawada Irrigation Sub. Dn. Sawada should issue the action signal.

12.3 The Executive Engineer, Jalgaon Irrigation Division, Jalgaon or in his absence Deputy Engineer, Sawada Irrigation Sub. Dn. Sawada should give further intimation in the same manner of breach of and the anticipated timing of the flood reaching at the different locations.

12.4 On receipt of the action signal, The Collector, Jalgaon will take full control of evacuation and relief operations and direct and supervise them.

12.5 The D.S.P. will accompany the Collector, and assist him in all the operations.

Copies of Flood maps to be supplied to :

1. The Commissioner Nasik Division, Nasik.
2. The Chief Engineer and Joint Secretary to Govt. (ID).
3. The Collector Jalgaon.
4. The Executive Engineer, Jalgaon Irrigation Dn. Jalgaon
5. The Executive Engineer, B & C Division, Jalgaon
6. The Executive Engineer, Chief Gate Erection, Unit, Nasik
7. The Superintending Engineer, M.S.E.B. Jalgaon
8. The Superintending Engineer, Mech, Circle (Gate)Poon
9. The Dist. Supdt. of Police Jalgaon.
10. The Police Commissioner, Nasik.
11. The chief Executive Officer, Z.P. Jalgaon.
12. The Deputy Engineer, Sawada Irrigation Sub. Dn. Sawada (Hatnur canal Sub-Division)
13. The Tahsildar, Raver, Yawal, Bhusawal.
14. The Police Sub. Inspector Raver, Sawada. Bhusawal. Yawal and Varangaon.
15. Divisional Engineer (Bridge) Central Railway, BSL.
16. Divisional Engineer, Central Railway, Bhusawal.

17. Asstt. Engineer, Central Railway , Bhusawal
 18. Divisional Supdt. Central Railway , Bhusawal.
 19. Control Officer, Central Railway, Bhusawal.
 20. Divisional Engineer (Telegraphs) Central Rly. BSL.

ENCLOSURE NO.1

List of villages likely to be affected in case of breach of Hatnur Dam and Subsequent high flood.

Sr. No.	LEFT BANK		RIGHT BANK	
	Ist. Priority	Iind Priority	Ist. Priority	IInd Priority
(1)	(2)	(3)	(4)	(5)
1.	Hatnur	1) Sawatar.	1. Lumkheda (Part)	-
2.	Pimpri Sekam (Part)	2) Nimbhora	2. Taskheda (Part)	-
3.	Kandari (Part)	3) Kathore (Tapat) (Part)	3. Rangaon	-
			4. Gavukheda	
			5. Raipur	
			6. Kathora (Padlsa) (Part)	

ENCLOSURE NO. II

List of Special Instalation Public Properties and Roads likely to be Damaged in case of Breach of Hatnur Dam.

Sr. No.	LEFT BANK	RIGHT BANK
1)	Special Installation coming under Flood zone	i) Kathore water supply scheme. ii) Deep- Nagar water supply scheme. iii) M.E.S. Pump house. iv) Kandari water supply scheme. v) C.R. BSL water supply scheme. vi) Bhusawal city water supply sch. vii) M.I.D.C. Jalgaon Pumping Station. viii) Hand Missing plant on tapi bank Taluka Yawal. ix) Duskheda water supply scheme. x) R.C.C. Hume pipe factory on tap bank, Taluka Yawal. xi) Crusher Factory on Tapi, Taluka Yawal. xii) Cil Pain Factory on Tapi Bank, Taluka Yawal. xiii) Pilode water supply scheme on Tapi bank Taluka Yawal. xiv) Sakri Fekary water supply scheme.
2)	Public properties coming under flood zone.	i) Primary school at Hatnur. ii) Primary school at Savtar Nimbhora. iii) Deepnagar rest house. iv) Panchayat office at Pimpriseken v) Railway bridges near Duskheda (Note: Rail track above flood level).

Sr. No.	LEFT BANK	RIGHT BANK
3)	Road likely to be submerged	i) Hatnur to Pimpri Sekem village Road. ii) Submersible causeway below Hatnur Dam. iii) State High-way Bhusawal to Sawada (Road level above flood level)