CHAPTER-1

SALIENT FEATURES OF KHANKI DIVISION

1.1 LOCATION

New Khanki Barrage is located on River Chenab about 16 KM Downstream from Alexandra Bridge and 56 KM from Marala for feeding Lower Chenab Canal off taking from its left flank. Prior to construction of New Khanki Barrage, Lower Chenab Canal (Inundation Canal) had been used to off take from Ghari Gola about 6 KM Downstream of New Khanki Barrage.

1.2 GENERAL DESCRIPTION

The designed capacity of new Khanki Barrage is 1,100,000 cusecs and revised designed discharge of off taking canal LCC is 11507 cusecs. This Barrage was recently completed in August, 2017. Khanki Division is responsible for maintenance of New Khanki Barrage & Lower Chenab Canal from RD 0+000 to RD 141+436 (Sagar Head), under administrative control of Superintending Engineer, Lower Chenab Canal (East) Circle, Sheikhupura and Chief Engineer, Irrigation Zone Faisalabad. This Division comprises of two Sub Divisions i.e. Head works Sub Division at Khanki and Sagar Canal Sub Division at Killa Ram Kaur (Hafizabad). The jurisdiction of Head works Sub Division consists of New Khanki Barrage, River Training Works and Lower Chenab Canal from RD 0+000 to RD 78+000 along with its off takes i.e. High Level Channel, Mancher Disty System, Mancher High Level Channel System, Vanike Disty System, while Sagar Sub Division is fully operational canal Sub Division having the control of Lower Chenab Canal from RD 78+000 to RD 141+436 and its off-taking channels i.e Gajar Gola Disty System, Hafizabad Disty System and Kot Nikka Disty System.

i. HEADWORKS SUB DIVISION

This Sub Division is headed by Sub Divisional Officer; Head works Sub Division with Headquarter at Khanki Head works. There are 7 No. Sub Engineer Sections in Khanki Head works Sub Division which are as under: -

- Head works section with Headquarter at Khanki Head works.
- Station Area section with Headquarter at Canal Colony Khanki.
- Right Marginal Bund section with Headquarter at RD 0-RMB.
- Mechanical section with Headquarter at Canal Colony Khanki.
- Hydraulic section with Headquarter at Khanki Head works.
- Chenawan Section with Headquarter at Chenawan.
- Alipur Section with Headquarter at Alipur.

ii. SAGAR SUB DIVISION

The Sagar Canal Sub Division is administratively controlled by Sub Divisional Officer; Sagar Sub Division at Killa Ram Kaur (Hafizabad) This Sub Division was originally further sub-divided into 5 No. Engineering Sections. The detail is as under: -

- Sagar Section with Headquarter at Sagar Head.
- Chak Kharl with Headquarter Chak Kharal.
- Killa Ram Kaur with Headquarter Killa Ram Kaur.
- Kot Chian with Headquarter Kot Chian.
- Jandoki with Headquarter Jandoki.

In both Sub Division, there is an extreme shortage of field staff.

iii. REVENUE ESTABLISHMENT

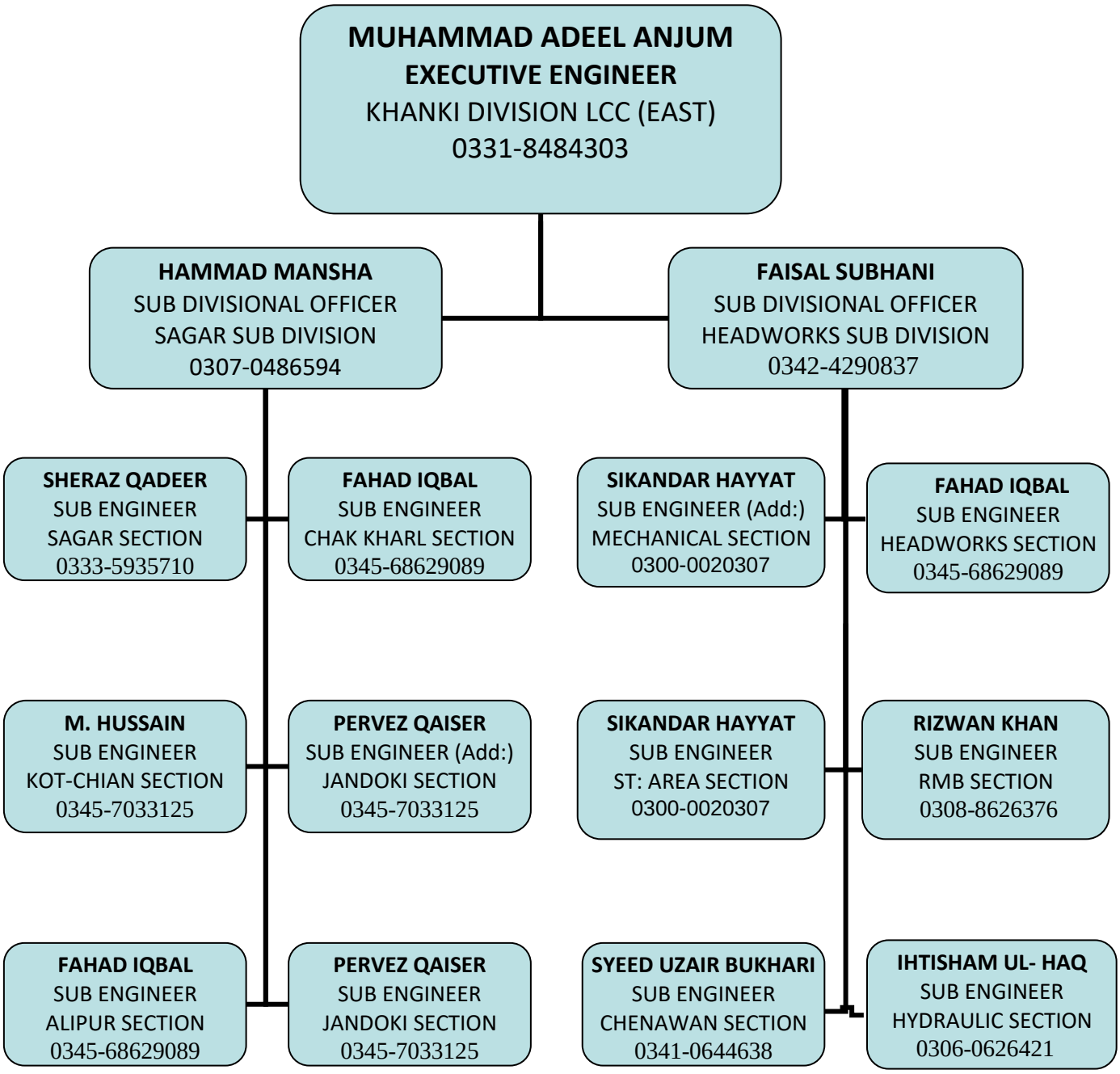
After suspension of Famer organization System by Government of Punjab, the operation and maintenance of all channels of Sagar Canal Sub Division was again transferred to the Department. There is acute shortage of revenue staff.

IV. DETAIL OF CHANNELS OF KHANKI DIVISION

Sr. No.	Name of Channels	Off Taking RD	Length in Miles	Discharge (Cusecs)
1	High Level Channel	500-R LCC	9.32	100
	1-R Minor	23105-R	1.42	11.8
	2-R Minor	35560-R	1.69	10.4
	3-R Minor	43046-R	0.80	4.40
2	Mancher Disty	40200-R	7.56	93.73
	Alipur Minor	17533-R	4.21	18.06
	Ram Nagar Minor	17533-R	4.21	34.49
	Kot Hara Sub Minor	29146-L	8.04	6.79
	Ram Nagar Truncated Minor	12830-R	5.01	26.68
3	Mancher High Level Channel	43800-R	3.90	34.72
	1-R Minor	7545-R	1.42	9.14
4	Vanike Disty	76200-R	19.10	245.77
	Dhilwan Minor	7630-L	3.13	23.69

	Chak Ghazi Minor	35446-L	1.76	18.25
	Ramke Minor	32000-L	3.68	38.44
	Kharak Sub Minor	10270-R	0.81	8.21
	Mehdiabad Minor	84900-R	2.00	8.50
5	Gajar Gola Disty	76223-R	23.93	287.64
	Kot Said Muhammad Minor	93100-L	7.30	59.60
	Dauloo Minor	71500-R	1.07	9.95
	Wazira Minor	63148-R	0.64	5.24
	Baura Minor	63200-L	0.80	8.27
	Dhiranke Minor	42459-R	3.60	23.80
6	Muradian Disty	119888-R	0.85	4.60
7	Kot Nikka Disty	119850-R	18.01	221.00
8	Shah Jamal Minor-I	36475-L	3.86	3.83
	Shah Jamal Minor-II	64850-L	1.60	4.55
9	Prem Kot Minor	36500-R	3.04	11.60
10	Kot Minor	53700-R	9.35	24.12
	Gunjianwala Sub Minor	19750-L	1.70	3.56
11	Jalalpur Minor	75000-R	10.57	35.34
	Fatehpur Sub Minor	18100-R	1.76	6.60
12	Dohatta Minor	86496-L	5.78	12.30
13	Madhora Minor	90615/R	12.86	33.96
14	Jandoki Minor	90615/R	12.45	34.64
	Kassisa Sub Minor	38250-R	5.48	8.60
15	Jaggawnala Disty	120200-R	1.71	5.00
16	Sagar Disty-1	131411-R	0.60	2.54
17	Sagar Disty-2	136417-R	0.25	5.10
18	Chak Chatta Disty	139986-L	1.77	6.00
19	Hafizabad Disty	139000-R	5.32	26.00
	Batera Minor	8475-R	3.25	7.00
	Killa Sahib Singh Minor	21965-R	0.94	4.50
	Lakhia Minor	26445-R	3.89	7.00
	Kariala Minor	26445-L	0.82	4.30
20	Channi Disty	181888-L	6.73	17.00

1.3 ADMINISTRATIVE SETUP



CHAPTER-2

FLOOD PROTECTION AND RIVER TRAINING WORKS

2.1 DESIGN PARAMETER OF TRAINING WORKS

i. KHANKI BARRAGE

Location	River Chenab 16 KM downstream of Alexandra Bridge on G.T Road near to Wazirabad
Year of Construction	2013-2017 (Complete in August, 2017)
Design Discharge	11.00 Lac cusec
Width of weir from abutment to abutment	4386.00 Ft.

Name of Bays	Clear water way of Bay (Ft.)	Crest Level R.L	No. of Gates	Height of Gates (Ft.)	Top Level of Gates R.L
Left Under Sluice	300.00	719.00	5	16.50	735.50
Bay No.1 (6-60)	3300.00	721.50	55	14.00	735.50
Right Under Sluice	300.00	719.00	5	16.50	735.50
Total	**3900.00**		**65**		

ii. LOWER CHENAB CANAL

Location	Left side of Barrage with main Regulator working during low and high supplies.
Full Supply Discharge	Kharif = 9000 cusecs. (Revised 11507 cusecs) Rabi = 7000 cusecs.
Full Supply Level at Head	724.88
Designed Bed Level at Head	712.88
Bed Width	275 Ft
Bed Slope	0.11 per 1000 Ft.
Designed Depth	12.00
Characteristics of Main Regulator	
No. of Bays	6
Width of Bays	30.00’
Crest Level	725.00’
Upstream Floor Level	725.00’
Downstream Floor Level	710.48’
Size of Gates	30 x 11.50

DATA OF RIVER TRAINING WORKS

Name of works	Off Taking RD	Length (Ft.)	Top Width (Ft.)	Designed apron of Bund / T. Head	Thickness
1. GUIDE BUNDS					
i. U/S Left Guide Bund	KNK Barrage	2891	32	40	5.0
ii. U/S Right Guide Bund	KNK Barrage	4800	40	40	5.0
iii.D/S Right Guide Bund	KNK Barrage	1303	20	40	6.0
iv. D/S Left Guide Bund	KNK Barrage	1303	20	40	6.0
2. MARGINAL BUNDS					
i. Left Marginal Bund	KNK Weir	21000	20	-	-
ii. Right Marginal Bund	KNK Weir	33650	20	-	-

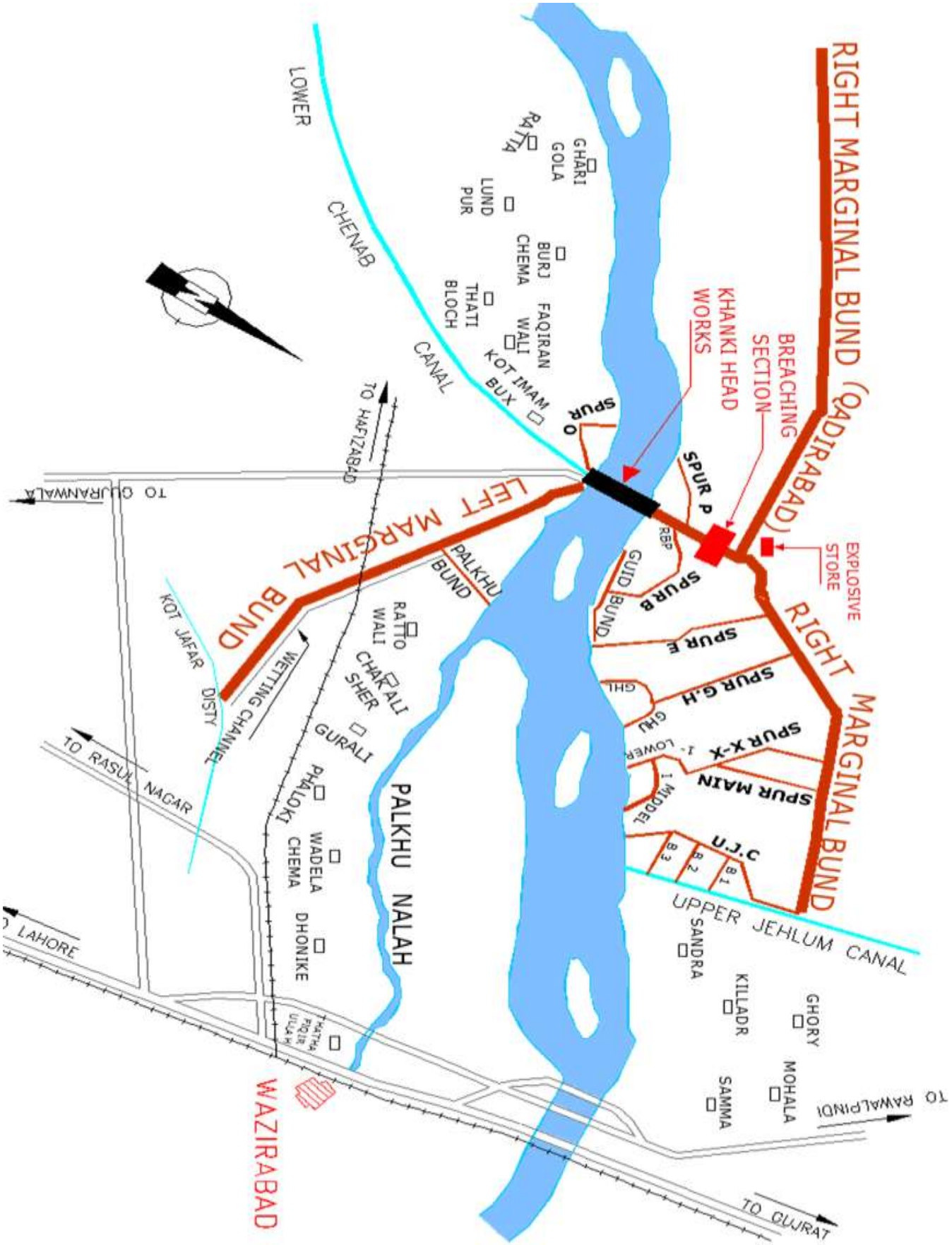
iii. SPURS

A. UPSTREAM KHANKI WEIR.					
1. Palkhu Spur	6200 LMB	2650	15	105.00	9.50
2. Spur "B"	4500	4110	15	80.00	6.00
3. Spur "E"	11800 RMB	10720	15	80.00	6.00
4. Spur "G.H"	15700 RMB	9077	20	-	-
5. Spur "G.H" Upper	9077 GHM	3200	15	30.00	6.00
6. Spur "G.H" Lower	9077 GHM	4500	15	80.00	6.00
7. Spur "X.X"	22835 RMB	5242	15	-	-
8. Spur "I"	25370 RMB	9000	15	-	-
9. Spur "I" Middle	4164 Spur I	2500	15	76.00	8.00
10. Spur "I" Lower	4936 Spur I	5464	15	60.00	5.00
11. Spur Main Bund	439880 UJC	7590	15	-	-
12. Spur B-1	2391 MB	1170	15	60.00	5.00
13. Spur B-2	4378 MB	1050	15	60.00	5.00
14. Spur B-3	6364 MB	1070	15	80.00	5.00
15. Spur B-4	7590 MB	650	15	80.00	5.00
TOTAL: -		**67993**			

iv. ABSTRACT

Sr. No.	Name of Bund	No.	Length	
			Feet	Miles
1	Guide Bund	4	10337	2.06
2	Marginal Bund	2	54650	10.93
3	Spurs	15	67993	13.59
	G. TOTAL: -	**21**	**132980**	**26.58**

2.2 LOCATION MAP ATTACHED



CHAPTER-3

BRIEF HISTORY OF PAST FLOOD EVENTS

After occurrence of exceptionally high floods in 1957, 1959, 1996-97 and during 2013-14 no significant flood has passed through Khanki Headwork's so far. Since after year 2000 few of the river training works vis-à-vis partition bund, U/S left groyne and U/S right guide bund were partially damaged by the hazards of past floods. Partition bund restored beyond its original alignment in 1998 could not sustain against high flood in 1999 and was badly damaged. Repairs to partition bund (Curved portion only) were carried out during the year 2003-04 and 2005-06.

During floods of 2006-07, the curved portion of partition bund was again damaged whereas the damage to straight portion of partition bund was aggravated. Restoring of both portion (straight and curved) was carried out under the project "Emergent repair of Punjab Barrages" during fiscal year 2007-2008. During years 2008 & 2011 freshets of flood in months July – August resulted in further increase of severe embayment along left flank of River at about 4.5 K.M D/S Khanki Head works. To check this embayment on permanent basis, PC-I for the scheme "Protective measures to save mettled road, abadies of village Thathi Baloch and burj Cheema from erosive action of river Chenab at downstream Khanki Head works" has already been cleared by P&D Punjab vide his letter No. 12(9)RO (cood) P&D/2008 dated 17-03-2008 and its approval from Federal Flood Commission could not be accorded.

All the weir bays and under sluices were operated successfully as per regulation rules to pass the exceptionally high flood in September, 2014 but the existence of new Coffer Dam and sheet piles in the regime of river just downstream of Head works executed by the contractor of New Khanki Barrage Project caused obstruction in water way which further contributed towards raising of exceptionally high water levels upstream old Khanki Headworks resulting in few flood damages.

During the flood 2025, a historically, exceptionally high flood was received at Khanki Barrage with 10,85,750 Cs as peak discharge on 27.08.2025 at 03.00 PM. Moreover, the exceptionally high flood (above 6.0 Lac Cusecs) sustained for 33 hrs. This exceptionally high flood was successfully passed through Khanki barrage without any damage to the barrage floors, piers, gates etc… However, three river training works at Right Side of Khanki Barrage. I.e., "Old Guide Bund", Spur "E" and Spur "GH" and Spur "I"

CHAPTER-4

DESIGN DATA, HISTORIC PEAK FLOOD DATA AND PREVIOUS FIVE-YEAR FLOOD DATA OF HEADWORKS/BARRAGES AND OR OTHER CONTROL POINTS

4.1 FLOOD LIMITS

Sr. No.	Discharge (Lac Cusecs)	Flood Classification
1	1.0 to 1.5	Lower flood
2	1.5 to 2.0	Medium flood
3	2.0 to 4.0	High flood
4	4.0 to 6.0	Very High flood
5	6.0 to above	Exceptionally High flood

4.2 TIME LAGS OF FLOODS

Limit	Range (Lac. Cusec)	Time Lag from Marala (Hours.)
Low	1.0-1.5	12.00
Medium	1.5-2.0	10.00
High	2.0-4.0	09.00
Very High	4.0-6.0	08.00
Exceptionally High	above 6.0	07.00

4.3 HIGHEST FLOOD

Sr. No.	From		To		Peak Duration (Hours)	U/S Gauge	U/S Discharge (Cusecs)	Remarks
	Date	Time	Date	Time				
1	27-08-57	03.00	27-08-57	04.00	01.00	739.00	1086416	Exceptionally High Flood
2	06-07-59	05.00	06-07-59	06.00	01.00	738.70	1021081	-do-
3	10-08-73	05.00	10-08-73	08.00	03.00	740.00	856296	-do-
4	17-07-75	02.00	17-07-75	03.00	01.00	737.00	666241	-do-
5	02-08-76	18.00	02-08-76	19.00	01.00	737.50	615043	-do-
6	26-09-88	12.00	26-09-88	13.00	01.00	739.30	864220	-do-
7	10-09-92	22.00	11-09-92	06.00	08.00	738.00	910512	-do-
8	28-07-95	21.00	28-07-95	07.00	10.00	737.10	650517	-do-
9	24-08-	05.00	24-08-	11.00	06.00	738.50	851269	-do-

	96		96					
10	28-08-97	12.00	28-08-97	15.00	03.00	738.20	847650	-do-
11	05-03-98	07.00	05-03-98	08.00	01.00	732.00	220298	High Flood
12	23-07-00	18.00	23-07-00	22.00	04.00	732.00	309253	High Flood
13	07-08-01	23.00	07-08-01	24.00	01.00	732.00	162848	Medium Flood
14	14-08-02	23.00	07-08-01	24.00	02.00	732.50	240389	High Flood
15	19-02-03	17.00	19-02-03	20.00	03.00	734.00	371788	-do-
16	17-08-04	22.00	17-08-04	23.00	02.00	732.00	151134	Low Flood
17	08-07-05	10.00	08-07-05	15.00	06.00	735.00	368078	High Flood
18	04-09-06	06.00	04-09-06	09.00	3.00	735.60	422740	Very High Flood
19	13-03-07	17.00	13-03-07	22.00	5.00	733.70	302197	High Flood
20	01-08-08	3.00	01-08-09	4.00	2.00	732.00	215412	High Flood
21	29-07-09	0.60	29-07-09	09.00	4.00	732.00	105358	Low Flood
22	07-08-10	0.50	07-08-10	0.70	3.00	734.80	334437	High Flood
23	17-09-11	5.00	17-09-11	08.00	4.00	732.00	166383	Medium Flood
24	04-08-12	23.00	04-08-12	24.00	1.00	732.10	186413	Medium Flood
25	15-08-13	10.00	15-08-13	14.00	4.00	736.10	410332	Very High Flood
26	07-09-14	7.00	07-09-14	8.00	2.00	743.20	947099	Exceptionally High Flood
27	23-09-15	13.00	23-09-15	14.00	2.00	732.30	164498	Medium Flood
28	07-08-16	24.00	08-08-16	05.00	6.00	735.50	418736	Very High Flood
29	19-07-17	08.00	19-07-17	09.00	2.00	733.50	192670	Medium Flood
30	13-08-18	24.00	14-08-18	01.00	2.00	734.00	189820	Medium Flood
31	01-08-19	24.00	01-08-19	04.00	4.00	733.50	189238	Medium Flood
32	28-08-20	7.00	28-08-20	22.00	5.00	735.50	292093	High Flood
33	29-07-21	12.00	29-07-21	16.00	4.00	733.50	189683	Medium Flood
34	12-08-	05.00	12-08-	07.00	2.00	733.50	216907	High Flood

	22		22					
35	20-07-23	02:00	20-07-23	05:00	4.00	733.50	211515	High Flood
36	16-08-2024	01.00	16-08-2024	04:00	4.00	734.00	168995	Medium Flood
37	27-08-2025	15.00	27-08-2025	16.00	1.00	739.00	1085750	Exceptionally High Flood

4.4 PEAK DISCHARGES

Sr. No.	From		To		Peak Duration (Hours)	U/S Gauge	U/S Discharge (Cusecs)	Remarks
	Date	Time	Date	Time				
1	27-08-57	03.00	27-08-57	04.00	01.00	739.00	1086416	Exceptionally High Flood
2	06-07-59	05.00	06-07-59	06.00	01.00	738.70	1021081	-do-
3	10-08-73	05.00	10-08-73	08.00	03.00	740.00	856296	-do-
4	17-07-75	02.00	17-07-75	03.00	01.00	737.00	666241	-do-
5	02-08-76	18.00	02-08-76	19.00	01.00	737.50	615043	-do-
6	26-09-88	12.00	26-09-88	13.00	01.00	739.30	864220	-do-
7	10-09-92	22.00	11-09-92	06.00	08.00	738.00	910512	-do-
8	28-07-95	21.00	28-07-95	07.00	10.00	737.10	650517	-do-
9	24-08-96	05.00	24-08-96	11.00	06.00	738.50	851269	-do-
10	28-08-97	12.00	28-08-97	15.00	03.00	738.20	847650	-do-
11	07-09-14	7.00	07-09-14	8.00	2.00	743.20	947099	Exceptionally High Flood
12	27-08-2025	15.00	27-08-2025	16.00	1.00	739.00	1085750	Exceptionally High Flood

CHAPTER-5

FLOOD FIGHTING STRATEGY

STAGE – 1

River Discharge Limit	1-2 Lac cusecs. The river water is entirely contained within its natural course.
Operational In-charge.	Sub Divisional Officer, Head works Khanki.

SUPERVISORY STAFF

i)	Sub Engineer, Head works.	Main weir Head Regulators and Training works on downstream left of weir.
ii)	Sub Engineer, Station Area.	Training works on upstream of Left side of River
iii)	Sub Engineer, RMB	Training works on Right side of River.
iv)	Flood season establishment.	Two Beldars per mile will be employed at the start of Flood Season in addition to the existing establishment for repairing the rain cut and maintaining bunds. This labour is kept available round the clock for any emergency.

STAGE – 2

River Discharge Limit	2-4 lac cusecs.
Operational In-charge.	Sub Divisional Officer, Headworks Khanki Barrage.

SUPERVISORY STAFF

i)	Sub Engineer Headworks	Main weir Head Regulators and Training works on downstream left of weir.
ii)	Sub Engineer Station Area.	Training works on upstream of Left side of River.
iii)	Sub Engineer, RMB	R.M.B RD1+000 to RD 16+000 upstream Right Bells bund, Guide bund, Spur ‘B” “E” and “G.H” (Main Upper and Lower).
iv)	Special watching.	The strength of watching establishment to be increased to 3 men per mile. The watching establishment has to be employed on staunching of bunds as spill water touches the bund in this phase.

STAGE – 3

River Discharge Limit.	4.00 to 6.00 Lac cusecs.
Operational In-charge.	Executive Engineer, Khanki. Sub Divisional Officer, Headworks Khanki.
Controlling Officers.	**1.** Sub Divisional Officer, Head woks Khanki to be In-charge of Headworks and protection works on Left side River. **2.** Sub Divisional Officer, Chuharkana Davison (Farooqabad) of Upper Gugera Division with all staff / establishment will be the overall in-charge of LMB RD.0+000 to RD.21+000. **3.** Sub Divisional Officer Pacca Dhalla of Upper Gugera Division with all staff / establishment will be the overall in-charge of RMB from RD.0+000 to RD.33+650.

SUPERVISORY STAFF

Sr. No.	Designation	Reach	Site of Camp
i)	Sub Engineer, Head works.	Head works	Head works
ii)	Sub Engineer, Station Area.	LMB RD 0+000 to 15+000 & Palkhu Spur.	At RD 6+200 LMB
iii)	Sub Engineer, RMB.	RMB RD 0+000 to 16+000 U/S & D/S Right Bells Bunds, Spurs B, E, G.H.	Right Marginal Bund RD 0+000
iv)	Sub Engineer, Chenawan.	LMB RD 15+000 to 21+000	Crossing of Mansoorwali Wazirabad Railway at LMB.
v)	Sub Engineer, Hydraulic.	RMB RD 16+000-33+650 Spur-I, XX, B-1, B-2 &B-4	Right Marginal Bund RD 15+000
vi)	Controlling Officer	Sub Divisional Officer (Farooqabad) of Upper Gugera Division with all staff / establishment will be the overall in-charge of LMB from RD.0+000 to RD.21+000.	
vii)	Special watching.	i. The establishment will be increased 4 men per mile. Eight men at every dangerous site will be deputed. ii. Civil Authorities will be called to help the establishment in watching the dangerous sites as soon as discharge exceeds five Lac cusecs. The Police and Military guards may also be called to take the position at vulnerable points.	

NOTE: - When the discharge at Khanki Barrage reaches to 6 Lac and above, the Executive Engineer Upper Gugera (Sheikhupura) will shift his camp at Khanki Barrage with all staff/establishment to assist Executive Engineer Khanki Division.

CHAPTER-6

FLOOD DAMAGES RESTORATION WORKS

FOLLOWINGS WERE THE DAMAGES OCCURRED AT KHANKI BARRAGE DUE TO EXCEPTIONALLY HIGH FLOOD OF 1085750 CS ON 27.08.2025.

1. Spur “E” in R.M.B Section at Khanki Barrage.

2. Stone apron of “GH” Lower In R.M.B Section at Khanki Barrage.

3. Old Guide Bund at Khanki Barrage.

4. Spur “GH” Main Between Rd 5+000 To 6+000

CHAPTER-7

FLOOD FIGHTING ARRANGEMENT

7.1 PRE-FLOOD ARRANGEMENT

Sr. No.	Activities	Target Dates
I.	**Preparation of Flood Fighting Plans**	
	a) Submission of Draft Divisional Plans by Zonal Chiefs to Chief Engineer, D&F (after scrutiny by SEs/CEs)	Done
	b) Review by Chief Engineer D&F	---
	c) Final submission of Flood Fighting Plans	Will be circulated as per schedule
II.	**Inspection of Flood Infrastructure**	
	a) By XENs.	-
	b) By SEs/CEs	-
	c) By Departmental & Army Teams	-
III.	**Indication of Encroachments on bunds and spurs to the Civil Administration**	List provided to civil administration
IV.	**Painting Gauges, RD Marks, Data Boards and Repairs to Flood Bunds etc.**	In progress
V.	**Replenishment of Reserve Stock of Stone and Flood Fighting Material**	
	a) Identification of needs	-
	b) Funding / Procurement Arrangements	Underway
	c) Procurement, stacking prescribed field checks	Underway
VI.	**Installation of Wireless Sets**	Will be done
VII.	**Opening of Zonal Flood Cells**	
	a) Duty Roster	---
	b) Operative	---

7.2 WATCHING ESTABLISHMENT

The watching establishment on flood protection bunds is required to be employed as scale & as per Govt. policy. Deployment of watching establishment as given in Chapter No.5. (Details of Watching Establishment are given on page No.47)

7.3 ARRANGEMENT AT SENSITIVE SITES

- In case of emergency at sensitive sites, arrangements to establish flood camps will be ensured and sufficient quantity of flood fighting material and equipment will be procured before time for watching during flood season. The flood fighting material will be kept in stores which are located in the premises of stores under the control/custody of the Sub Engineers concerned. (Details are attached on page No.48)

7.4 WATCHING MATERIAL

Watching material, which will be placed at different sites, most of which is yet to be procured, further an additional material will also be required in order to meet with extraordinary worst situation & cope/handle the site situation. Hence the material mentioned at page No. 17 would be kept ready. Most of it has already been procured on headquarters of this purpose.

- During flood season on sensitive sites to meet with any emergency the detail of Reserve stock of stone is given below: -

RESERVE STOCK STONE AVAILABLE.

> No reshuffling / recouping of reserve stone are required as available quantity is more than 70 % which is sufficient.

> Flood fighting camps along with the flood fighting material will be established at sensitive sites. Departmental machinery will be deployed at sensitive sites according to the action plan as water level rises from low to medium and medium to high accordingly. Detail of action plan at sensitive.

Sr. No.	Site	Approved Reserve Stock Limit (Lac Cft)	Available (Lac Cft)	Balance Required (Lac Cft)
1	Upstream Left Bells Bund (Stone Yard)/LMB	1.500	3.649	-2.149
2	U/S Right Bells Bund	0.500	0.834	-0.334
3	Right Guide Bund	0.500	0.224	0.276
4	Palkhu Spur Stone exist at Stone yard Khanki	1.000	0.228	0.772
5	Spur "E"	0.500	0.037	0.463
6	Spur G.H Upper	0.250	0.159	0.091
7	G.H Lower	0.500	0.184	0.316
8	"I" Middle	0.250	0.154	0.096
9	"I" Lower	0.250	0.309	-0.059
10	"B" 1	0.250	0.085	0.165
11	"B" 2	0.250	0.040	0.210
12	"B" 3	0.250	0.078	0.172
13	"B" 4	0.250	0.112	0.138
14	Spur "P" (Remove at site)	0.500	0.000	0.500
15	Partition Bund (Remove at site)	0.500	0.020	0.480
16	G.H Main	0.250	0.067	0.183
Total		**7.500**	**6.180**	**1.32**

CONSOLIDATED RESERVE STOCK OF STONE

Sr. No.	Canal Division	Sanctioned Reserve Stock Limit (Lac Cft)	Minimum Quantity Required (Lac Cft) (60%)	Stone Available at Site (Lac Cft)	%age Stone Available w.r.t Sanctioned Limit	Balance Required (Lac Cft)	Remarks
1	Khanki	7.500	4.500	6.180	82%	1.32	Available stone sufficient

7.4 WATCHING MATERIAL

(Minimum requirement of Flood Fighting Materials for each Permanent Camp (15 miles)

Sr. No.	Items	Unit	Required Quantity	Available Quantity	Balance Quantity	Remarks
1	Shouldari/Tent 18x36	No	01	0	0	A little Quantity of some items of T&P articles is available mostly items has been used during flood 2025 & balance Quantity will be purchased before flood 2026
2	Chairs	No	06	0		
3	Table 4x3’	No	01	0		
4	Generator (2-5 KVA)	No	01	0		
5	Pedestal Fans 24”	No	01	0		
6	Charpois	No	02	0		
7	Symbolic Jackets	No	50	0		
8	Polyethylene Sheet 0.03 mm	Kg	100	0		
9	Bamboos (2.5" dia and 10 ft long)	No	100	0		
10	Water Cooler (30 Liter)	No	01	0		
11	Portable Umbrella	No	02	0		
12	Life Jackets	No	05	0		
13	Utensils (10 person serving)	No	01	0		
14	Jute 3. To 5 Cft Plastic bags 1.25 Cft	No	1000	0		
15	Walkie Talkie Set	Sets	02	0		
16	Raincoats	No	10	0		
17	LED flood light 500 watt	No	10	0		
18	Extension Cable (10 ft) 7/44	No	02	0		
19	Rechargeable torches	No	20	10		
20	Kassi	Kg	20	10		
21	Axes	No	20	0		
22	G.I. Buckets	No	05	05		
23	7/44 cable	Feet	500	0		
24	Sutli	Kg	02	0		
25	Sewing Needles	No	10	0		
26	Emergency Medical Kit	No	1	0		
27	Wire crates (3x3x3) (only at those camps near river action and where reserve stock exists)	No	100	0		

Minimum requirement of Flood Fighting Material for the Temporary Camp:
(7 or 5 miles during medium to exceptionally high flood to be outsourced)

Sr. No.	Items	Unit	Approved Quantity	Remarks
1	Shouldari/Tent 18x36	No	01	Outsourced
2	Walke Talkie Set	Sets	01	
3	Chairs	No	06	
4	Raincoats	No	10	
5	Table 4x3’	No	01	
6	LED flood light 500 watt	No	10	
7	Generator (2-5 KVA)	No	01	
8	Extension Cable (10 ft) 7/44	No	02	
9	Pedestal Fans 24”	No	01	
10	Rechargeable torches	No	20	
11	Charpois	No	02	
12	Kassi	No	20	
13	Symbolic Jackets	No	50	
14	Axes	No	20	
15	Water Cooler (30 Liter)	No	01	
16	G.I Buckets	No	05	
17	Portable umbrella	No	02	
18	7/44 cable	Feet	500	
19	Utensils (10 person serving)	No	01	
20	Sutli	Kg	02	
21	Jute 3. To 5 Cft Plastic bags 1.25 Cft	No	500	
22	Sewing Needles	No	10	

Arrangement for sounding and probing will be managed if needed. The facilities available for sounding and probing are:

- Boat
- Sounding Rod
- Probing Rod

7.6 LIGHTING ARRANGEMENT

Sub Engineer, Mechanical will keep all the Flood Lights and other Lighting arrangements in working condition with the help of Sub Divisional Officer, SCADA and his staff. In case of failure of electricity supply from WAPDA generators are available in SCADA Office at Barrage. Furthermore, 2 No power packs are also available for supplying power as last lest resort in case failure of generators.

7.7 RATION ARRANGEMENTS

The establishment and the Supervisory staff will have their own food arrangement. The Civil Authorities will be ready to arrange the supply of ration for at least 500 men when required during emergency.

7.8 P.O.L ARRANGEMENT FOR VEHICLE

In order to close & strengthen the breach / cut sites & operate breaching sections, some reserves of petrol and diesel are required for use in excavators, dozers & generators. Before the start of flood season, the Deputy Commissioner, Wazirabad will get 2500 liters of petrol and 500 liters of High-Speed Diesel Oil reserved at any petrol pump in close vicinity of Khanki Head works at Wazirabad Alipur Road. Similarly, Deputy Commissioner, Gujrat will get 1500 liters of petrol and 2000 liters of diesel reserved at Gujrat, Shahdiwal Road Executive Engineer, Khanki would be informed about the arrangement.

7.9 TRANSPORTATION

Khanki Division has 03 No Tractor and 2 No Trollies. Tractor Trollies are also available with the local contractors who will arrange these on call in emergency for transportation of labour and materials. The Civil Administration of Wazirabad and Gujrat Districts will be requested to provide transport for carriage of emergent material if not available from local sources in case of emergency.

7.10 LAW AND ORDER

Police Guard is deputed on left & right side for security of barrage. Additional strength would be requested employ on LMB & RMB to guard against any miscreant cutting the left and right marginal bunds during very high flood. Deputy Commissioner, Wazirabad and Gujrat have to arrange such guards when flood at Khanki is 5.00 Lac cusecs or above.

7.11 MEDICAL ARRANGEMENT FOR LABOUR

Basic Health unit is available in Khanki Canal Colony. Moreover, District Wazirabad Health Officer would be requested to make arrangements during the flood season.

7.12 LIAISON WITH OTHER DEPARTMENT

Executive Engineer, Khanki and Sub Divisional Officer, Head works will keep liaison with their counter parts in other departments. Higher Authorities of other Departments will be approached, if needed through Superintending Engineer Lower Chenab Canal (East) Circle Sheikupura and Chief Engineer, Irrigation Zone Faisalabad.

7.13 ROLE OF ARMY

At least a strength of about 300 Army personnel is required to deal with any emergency when the discharge exceeds 500,000 cusecs at Khanki. On the request of the Executive Engineer, Khanki Division, the Commander Headquarters 30 Engineers Corps Gujranwala Cantonment, shall be requested to arrange this assistance.

7.14 DUTIES OF TELEPHONE ATTENDANT

Phone at Telegraph office Khanki is attended by the Signalers on duty and they are available round the clock during flood season. The Head Jamadar with mobile phone will be available in flood office similarly. All the officers / officials are informed to use their mobile phones during emergency and will not switch off.

7.15 WIRELESS ARRANGEMENTS

The wireless station in the flood warning center located in observatory building at Head works is installed by the Telecommunication wing of the Punjab Police Department before the flood season. Two mobile wireless set will be fixed in the vehicles of Executive Engineer & Sub Division Officer of Khanki Head works. The flood warnings, flood gauges, discharge and other information regarding flood are received and transmitted by the flood warning station at Lahore. The mobile units in the vehicle help the touring / inspecting officials to remain in touch constantly with the flood offices.

CHAPTER-8

DETAIL OF ENCROACHMENT

ORDINARY ENCROACHMENT

Sr. No.	Total Ordinary Encroachment	Removed	Remaining	Action to be Taken
1.	73	48	25	Notices issued to encroachers to vacate the Govt. Land. However, these encroachments do not affect the design parameters of flood fighting infrastructure.

CRITICAL ENCROACHMENT

Sr. No.	Total Critical Encroachment	Removed	Remaining	Action to be Taken
1.	There is no Critical Encroachment on Flood Embankments In Khanki Division.			

CHAPTER-9

DUTY ROSTER/FLOOD FIGHTING PROGRAM

PHASE I - (PRE FLOOD PERIOD)

This phase covers the pre flood period starting from start of the flood season upto the time the flood water raises up to 1 foot above general Natural Surface Level (NSL) along the flood bunds.

WATCHING

Flood watching establishment will be arranged through Government contractor on hire & fire basis according to flood scales / stages and other essential needs at site.

Stage	Strength
Water level is 1 foot above NSL or below along the flood bund	1 watchman person shall be deployed per 2mile per one shift during 24 hours on Left Marginal and other flood spurs.
Water level is more than1 foot above NSL along the flood bund	1 watchman person shall be deployed per 2mile per one shift during 24 hours on Right Marginal and other flood spurs.

During this phase the Sub Divisional officer of the bunds and respective Sub Engineers of the sections of the bunds will be the controlling officers under the overall supervision of the Executive Engineer, Khanki Division.

PHASE II – (LOW FLOOD I.E. 1.0 TO 1.5 LAC CUSECS)

This phase starts when the discharge at the Khanki Barrage is between 1 to 1.5 Lac cusecs. The details of the actions to be taken during this phase are as follows:

Activity	Action
Shifting of watching & necessary flood material to watching huts.	SDO Headworks and Sub Engineers

Stage	Strength
The discharge ranges between 1.0 to 1.5 lac cusecs	1 person shall be deployed per 1mile per one shift during 24 hours on Marginal bunds and other flood spurs. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

SUPERVISORY STAFF

The duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the sub-divisional officer concerned will perform the duties.

Sr. No.	Location	Duty of Officer / Official
1	Barrage as a whole	Sub Engineer, Head works
2	R.M.B RD 0+16+000 U/S & D/S Right Bells Bund Spur P.B.E and G.H	Sub Engineer, R.M.B
3	L.M.B RD 0+000 15+000 with Palkhu Spur under Sub Divisional officer, Head works.	Sub Engineer Station Area
4	R.M.B RD 16+000-33+650 Spurs I, B-1, B-2 and B-4.	Sub Engineer Hydraulic Section

PHASE III – (MEDIUM FLOOD I.E. 1.5 TO 2.0 LAC CUSECS)

This phase starts when the discharge at the Khanki Barrage crosses the medium level and is upto high level flood i.e. between 1.5 to 2.0 Lac cusecs. The details of the actions to be taken during this phase are as follows:

Stage	Strength
The discharge ranges between 1.5 to 2.0 lac cusecs.	2 persons shall be deployed per mile per shift for 2 shifts during 24 hours on Marginal bunds and other flood spurs. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

SUPERVISORY STAFF

The duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the concerned Sub Divisional Officers will perform the duties.

Sr. No.	Location	Duty of Officer / Official
1	Headworks as a whole	Sub Divisional Officer, Khanki Barrage Sub Engineer Barrage
2	R.M.B RD 0+16+000 U/S & D/S Right Bells Bund Spur P.B.E and G.H	Sub Engineer, R.M.B
3	L.M.B RD 0+000 15+000 with Palkhu Spur under Sub Divisional officer, Head works.	Sub Divisional Officer, Khanki Barrage Sub Engineer Station Area
4	R.M.B RD 16+000-33+650 Spurs I, B-1, B-2 and B-4.	Sub Engineer Hydraulic Section

PHASE IV – (HIGH FLOOD I.E. 2.0 TO 4.0 LAC CUSECS)

This phase starts when the discharge at the Khanki Division is between 2.0 to 4.0 Lac cusecs. The details of the actions to be taken during this phase are as follows:

Activity	Action
Requisition for 100 Army personnel	XEN KHANKI

Stage	Strength
The discharge ranges between 2.0 to 4.0 lac cusecs	2 persons shall be deployed per mile per shift for 2 shifts during 24 hours on Marginal bunds and other flood spurs. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

SUPERVISORY STAFF

The duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the sub divisional officers concerned will perform the duties.

Sr. No.	Location	Duty of Officer/Official
1	Headworks as a whole	Executive Engineer, Khanki Barrage Sub Divisional Officer, Khanki Barrage Sub Engineer, Barrage

2	R.M.B RD 0+16+000 U/S & D/S Right Bells Bund Spur P.B.E and G.H	Sub Divisional Officer, Farooqabad, Upper Gugera Division
		Sub Engineer, R.M.B
		Sub Engineer, Sagar

3	L.M.B RD 0+000 21+000 with Palkhu Spur under Sub Divisional officer, Head works.	Executive Engineer, Khaki Barrage Sub Divisional Officer, Barrage Sub Engineer, Station Area Sub Engineer, Chenawan
4	R.M.B RD 16+000-33+650 Spurs I, B-1, B-2 and B-4.	Sub Divisional Officer, Pacca Dhalla of Upper Gugera Division Sub Engineer Hydraulic Sub Engineer, Chenawan

PHASE V – (VERY HIGH FLOOD I.E. 4.0 TO 6.0 LAC CUSECS)

This phase starts when the discharge at the Khanki Division is between 4.0 to 6.0 Lac cusecs. The details of the actions to be taken during this phase are as follows:

Activity	Action
Requisition for 300 Army personnel	XEN KHANKI

Stage	Strength
The discharge ranges between 4.0 to 6.0 lac cusecs	2 persons shall be deployed per mile per shift for 2 shifts during 24 hours on Marginal bunds and other flood spurs. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

BREACH CLOSING SQUAD

When the discharge will exceed 4.00 Lac cusecs, two units will be kept on Left Marginal Bund and three at Right Marginal Bund and one unit will be kept at Sagar Sub Division for closing any kind of leakage / breach.

SUPERVISORY STAFF

The duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the sub divisional officers concerned will perform the duties.

Sr. No.	Location	Duty of Officer/Official
1	Headworks as a whole	Executive Engineer, Khanki Barrage Sub Divisional Officer, Khanki Barrage Sub Engineer, Barrage

2	R.M.B RD 0+16+000 U/S & D/S Right Bells Bund Spur P.B.E and G.H	Sub Divisional Officer, Farooqabad, Upper Gugera Division
		Sub Engineer, R.M.B
		Sub Engineer, Sagar

3	L.M.B RD 0+000 21+000 with Palkhu Spur under Sub Divisional officer, Head works.	Executive Engineer, Khaki Barrage Sub Divisional Officer, Barrage Sub Engineer, Station Area Sub Engineer, Chenawan
4	R.M.B RD 16+000-33+650 Spurs I, B-1, B-2 and B-4.	Sub Divisional Officer, Pacca Dhalla of Upper Gugera Division Sub Engineer Hydraulic Sub Engineer, Chenawan

PHASE VI – (EXCEPTIONALLY HIGH FLOOD I.E. ABOVE 6.0 LAC CUSECS)

This phase commences when the discharge at the Khanki Barrage is in exceptionally high flood stage i.e. more than 6.0 Lac cusecs. The details of the actions to be taken during this phase are as follows:

Activity	Action
Deputy Commissioner is to be informed to make arrangement for the evacuation of the marooned public within LMB and RMB.	Executive Engineer, Khaki Barrage.
Military Authorities to keep ready for emergent operation	Executive Engineer, Khanki Barrage
Police to watch that no un authorized cut is	

made by public especially all along LMB and RMB. Engineers 4 Corps for energizing the breaching section, when water level approaches R.L 743.00 mark at the emergency. Gauge installed at RD 5+000 of LMB. Arrangement for 200 Volunteers to cut RMB at Breaching section in case the blasting arrangement doesn't work.	Executive Engineer, Khanki Barrage District Administration & Head Clerk Khanki Division.

WATCHING

Stage	Strength
The discharge more than 6.0 Lac cusecs	5 persons per mile per shift in three shifts during 24 hours on Marginal and other flood bunds. 1 Chowkidar per watching hut for round the clock duty till the time watching material is taken back from the watching huts after recession of the flood to a level 1 foot above NSL.

SUPERVISORY STAFF

The duty roster during this phase of the officers/officials is tabulated below. The officials under the overall control of the Sub Divisional Officers concerned will shift their headquarters and will perform the duties.

Sr. No.	Location	Duty of Officer/Official
1	Barrage as a whole	Executive Engineer, Upper Gugera Division Sub Divisional Officer, Barrage Sub Engineer, Barrage
2	R.M.B RD 0+16+000 U/S & D/S Right Bells Bund Spur P.B.E and G.H	Executive Engineer, Khanki Barrage Sub Divisional Officer, Farooqabad, Upper Gugera Division Sub Engineer, R.M.B Section of Barrage Sub Engineer, Sagar
3	L.M.B RD 0+000 21+000 with Palkhu Spur under Sub Divisional officer, Head works.	Executive Engineer, Upper Gugera Division Sub Divisional Officer, Barrage Sub Engineer, Station Area Sub Engineer, Chenawan
4	R.M.B RD 16+000-33+650 Spurs I, B-1, B-2 and B-4.	Executive Engineer, Khanki Sub Divisional Officer, Pacca Dhalla of Upper Gugera Division Sub Engineer, Chenawan

CHAPTER-10

EMERGENCY TELEPHONE NUMBERS

Sr. No.	Designation	Code	Office
1	Secretary Irrigation Department Fax No.	042 042	99212117-18 99212116
2	Chief Engineer Irrigation Faisalabad Fax No. Cell No.	041 041 0300	9200268 9200277 9650355
3	Chief Engineer Drainage and Flood Lahore Fax No	042 042	99230602 35862081
4	Superintending Engineer LCC (E) Circle SKP	056	9200339
5	Superintending Engineer LCC (E) Circle FSD	041	9200273
6	Superintending Engineer LCC(W) Faisalabad	041	9200272
7	Executive Engineer Operation Faisalabad	041	9200270
8	Flood Emergency Officer Irrigation Zone Faisalabad	041	9200270
9	Tele Office Irrigation Faisalabad	041	9200774
10	Director Flood/Secretary Punjab Flood Commission	042	99231614
11	Director Flood fore-casting and warning Center 46 Jail Road Lahore.	042	9200208
12	Headquarter Engineer 30 Corp GRW Cantt.	055 055	269-2353 269-2360
13	106 Engineer/Military Emergency Batn. Gujranwala Cantt.	055	269-5175
14	Executive Engineer Khanki Head Works (M. Adeel Anjum) Mobile No.	055 0309	6266327 8570989
15	Tele Office Khanki Barrage	055	6266239
16	Sub Divisional Officer Khanki Barrage (Faisal Subhani) Mobile No.	0342	4290837
17	Tele Office Head Sagar Mobile No.	0346	7454934
18	Deputy Commissioner Wazirabad.	055	6608566
19	Deputy Commissioner Hafizabad.	0547	521784 521075
20	Deputy Commissioner Officer Gujrat.	053	9260010-12
21	District Police Office Gujranwala.	055	9200602-03
22	District Police Officer Gujrat	053	9260026
23	District Police Officer Hafizabad	0547	523337
24	Flood Warning Center Wazirabad	055	6603400 6608566
25	Deputy District Officer (Rev) Wazirabad	055	6608577 6608566
26	Assistant Engineer Railway Wazirabad	055	660369
27	Deputy District Officer (Rev) Hafizabad	0547	525460
28	Executive Engineer Qadirabad Barrage Fax No.	0547 0547	550198 550190
29	Executive Engineer Upper Gugera Division Sheikhupura	056	9200256
30	Executive Engineer Hafizabad Division Faisalabad	041	9200473
31	Executive Engineer Gujrat Division UJC Gujrat	053	3525298
32	Executive Engineer Marala Divn: UCC Marala Fax No.	052 052	3502102 3502120
33	Resident Engineer Power House Shadiwal	053	3524144

CHAPTER-11

STANDARD OPERATING PROCEDURE (SOP) FOR BREACHING SECTIONS

11.1 HISTORY OF THE BREACHING SECTION

Khanki head works was constructed during the year 1889-92. At that time, there was no concept of breaching section. After the devastation of 1973 Flood, Flood commission was created who decided to construct breaching section on every structure. In compliance to that, a breaching section of Khanki Head works was constructed between RD. 3+000 to 4+000 of Right Marginal Bund. During exceptionally high flood in September, 2014, it has been operated to ensure the safety of structure, public life and property.

Moreover, the charging material will be arranged by the Army and is stored in the Explosive Store at Right Marginal Bund RD 5. When the discharge D/S Marala exceeds 7.00 Lac cusecs and River is rising, the charging material will be lowered into the pipes. When the flood water touches R.L 743.00 at RD 5+000 Left Marginal Bund and continues to rise, orders will be given by the Executive Engineer Khanki or his representative at critical point or by the Senior Most Irrigation Officers present at site. The explosive material inspection is carried out by Army Officer.

The breaching site will be activated by Army during flood season. An Army unit will be engaged from Gujranwala Cantt: and remains ready to operate the breaching site when asked for. Breaching Section was constructed after flood 1973 and it has been operated during exceptionally high flood in September, 2014.

11.2 LOCATION, DESIGN, QUANTITY AND VARIETY OF THE EXPLOSIVE REQUIRED FOR DETONATION

The site of breaching sections is located between RD. 3+000 to 4+000 of Right Marginal Bund. It has been designed in three sections of 90 feet in length and 300 feet apart. Each section consists of five rows; each row consists of 15 x liners. Breaching section is located at 32’25’27’’ N, 73’57’58’07’’E.

Sr. No.	Name of explosive	unit	Quantity Required	Quantity Available	Deficit Quantity
1	Wabox	Kgs	2200	-	2200
2	Wabonite	Kgs	4400	-	4400
3	EI Cable	Meters	2200	-	2200
4	Detonating Cord	Meters	1800	-	1800
5	MS electric Detonating (3.5 s)	Nos	45	-	45
6	MS electric Detonating (3 s)	Nos	90	-	90
7	MS electric Detonating (1 s)	Nos	90	-	90
8	MS non electric Detonator (3.5 s)	Nos	225	-	225
9	Leather Detonator (Non electric) length 10 m (delay 1-10)	Nos	225	-	225
10	Safety Fuse	Meters	100	-	100
11	Primer	Nos	225	-	225

STATUS OF EXPLOSIVE

Note: Upon the joint inspection, the representative of Army Personals has declared the explosive as expired, therefore, there is need to procure the explosive material for upcoming flood 2026.

11.3 ARRANGEMENT OF EXPLOSIVES AND SECURITY OF EXPLOSIVE STORES

Explosive store for storage of explosive material was constructed at Khanki Barrage between RD 3+000 to 4+000 of RMB during 2024-25. Now, the entire required explosive material and accessories are shifted at RD 3+000 to 4+000 of Right Marginal Bund. Pre-flood and post-flood Survey board inspects the explosives every year. The unserviceable explosive is destroyed and fresh explosive is recouped as the shelf life of Wabox and Wabonite is one year. During flood season 2014 breaching section was operated during exceptionally high flood and all explosive was used. For flood season 2026 all the required explosive material/accessories are need to be procured as the previously available explosive has expired, and will not be use full for flood 2026.

11.4 LIST OF THE SECURITY STAFF WITH DETAIL OF THEIR TRAINING ETC

Three ex-military men security guard have been deployed for security of explosive store at Head Khanki.

11.5 DETAIL OF MECHANICAL MEANS AS A STAND BY ARRANGEMENTS IN CASE OF DETONATION FAILURE

Two No. Excavators from District Administration Gujrat (Deputy Commissioner Gujrat) will be engaged at the breaching section as a standby arrangement in case of detonation failure.

11.6 DUTY ROSTER IN CASE OF CRITICAL SITUATION

Independent Sub Divisional Officer and Sub Engineer will be deputed at the breaching section.

11.7 BREACHING COMMITTEE WITH THEIR ACTION PLAN

BREACHING COMMITTEE

(a) Responsibility for the maintenance and operation of each breaching section shall rest upon the department owning the structure at which the breaching section is located.

(b) Breaching section shall be operated on the orders of following committee: -

(i) Deputy Commissioner of the District in which the breaching section is located, who shall also be the convener of the committee;

(ii) Deputy Commissioner of the district likely to be affected by the operation of breaching section or his representative (in case the area affected falls outside the district in which the breaching section is located);

(iii) Representative of the department owning the structure at which the breaching section is located (not less than the rank of an Executive Engineer or equivalent);

(iv) Representative from C&W Department not below the rank of an Executive Engineer;

(v) Executive Engineer concerned of the Irrigation Department;

(vi) Representative from Pakistan Army not below the rank of Lt. Colonel.

(c) The decision to operate a breaching section shall be taken by the committee keeping in view the technical advice of the Executive Engineer concerned of the Irrigation Department. In case of any difference opinion among the members, the final decision shall rest with the Deputy Commissioner

(d) In case of unavailability of the Deputy Commissioner or his inability to take decision, or in case of a difference of opinion between the Deputy Commissioner of the District in which the breaching section is located and the district which is likely to be affected by the operation of the breaching section, the decision to operate a breaching section shall be taken by the respective Commissioner;

(e) Breaching section shall be operated when one or more of the following conditions are met:-

(i) The discharge capacity of the structure for which breaching section is located is exceeded and the safety of structure is threatened;

(ii) The critical gauge as indicated in the relevant Flood Fighting Plan is achieved or exceeded and is rising;

(iii) The safety of major population center-(s) is threatened due to high flood levels and in view of the Executive Engineer concerned of the Irrigation Department, operation of breaching section can help in reduction of flood levels.

(f) Where, in view of the Executive Engineer concerned of the Irrigation Department or the representative of the department owing the structure at which the breaching section is located, the aforesaid criteria is expected to

be met after due consideration of all available technical and hydrological conditions, the aforesaid committee may operate the breaching section before the critical gauge is achieved or exceeded. In every such case, the view of the Executive Engineer concerned of Irrigation Department or the representative of the department owning the structure shall be expressed in writing and shall be based on flood forecast by Pakistan Meteorological Department or other reliable sources, the trend of discharges in the relevant river at upstream locations, the lag times, estimated attenuation and expected inflows from tributaries, nullahs and streams en-route. Where advance breaching is planned, the committee may also consult professional experts and seek advice from the Superintending Engineer or the Chief Engineer concerned of the Irrigation Department.

(g) Breaching section shall be operated by the contingent deputed by the Engineering-in-Chief; Pakistan Army as indicated in the Flood Fighting Plan, Explosive method shall be preferred method for operation of breaching section. However, the department owning the structure on which the breaching section is located, and in case of their failure to do so, Irrigation Department shall make available, in advance, necessary earth moving machinery and other equipment for affecting the breach through mechanical means in the shortest possible time.

(h) The Deputy Commissioner concerned and all other relevant agencies shall ensure all necessary arrangements for the safety and if required evacuation of population likely to be affected by the operation of breaching section.

ACTION PLAN

The breaching section is located between RD 3+000 to RD 4+000 of Right Marginal Bund. There are three sections each of 100 Ft. length at 200 Ft. interval. It is activated when critical gauge at RD 5+000 Left Marginal Bund attains RL 743.00. No population area is likely to be affected due to operation of breaching section.

OPERATION OF THE BREACHING SECTIONS

i. When the flow down of Marala exceeds 4.00 Lac & rising, the explosive material will be shifted to breaching section from flood relief explosive store.

ii. When the discharge downstream Marala Head works exceeds 6.00 Lac & raising, the charging material will be lowered into the pipes by the Army Unit.

iii. When the flood water touches R.L 743.00 at RD 5+000 Left Marginal Bund and is still rising, orders will be given by the Executive Engineer Khanki or his representative available at the critical point or the senior most Irrigation officer present at site for breaching.

iv. Executive Engineer Khanki, his representative available at the critical point or the Higher Irrigation Officer will have the discretion to make relief cuts even earlier for the safety of the Head works and the Marginal Bund.

v. Deputy Commissioner, Gujrat will be informed about the breaching operation and the relief cuts for necessary action.

vi. The above-mentioned arrangements for breaching operation have been approved by the Punjab Flood Commission in its powered meeting held on 12-07-1989 which was communicated by the Relief Department vide **No.1664-89/1896-CR-IV dated 07-08-1989.**

11.8 LIST OF THE VILLAGES LIKELY TO BE INUNDATED IN CASE OF BREACH

Left Side of Khanki Headworks				**Right Side of Khanki Headworks**			
Sr. No.	**Name of Village**	**No. of Houses**	**Population**	**Sr. No.**	**Name of Village**	**No. of Houses**	**Population**
1	Gorali	400	1800	1	Dharowal Din	Cultivated Area will be Affected	
2	Chak Ali Sher	100	550	2	Khojianwali		
3	Kot Kahlwan	80	410	3	Goleki		
4	Ratowali North	45	320	4	Qasimabad		
5	Ranike	420	1400	5	Nathu Kot	70	380
6	Ratowali South	80	800	6	Mangat Nicha	Cultivated Area will be Affected	
7	Khanki Head	700	3200	7	Ahmed Pur		
8	Faqiranwali	50	800	8	Sagar Kalan		
				9	Langay		
				10	Chak Gillan		
				11	Kot Moujdin		
				12	Kot Qutabdin		
Total: -		**1875**	**9280**			**70**	**380**

11.9 ANNOUNCEMENT AND DETAILS OF EVACUATION ARRANGEMENTS

The time lag between Marala Barrage and Khanki Head works is about 9 hrs. Thus, Irrigation department has sufficient time to inform Civil Administration and other concerned agencies about the flood situation for warning the civil population, arranging their evacuation and adopting necessary protective measures. A critical gauge stands fixed at RD 5+000 of Left Marginal Bund depicting the trend of the flood heights. Moreover, when the critical gauge will attain RL 743.00 besides the river is still in rising position; the situation will be brought to the notice of Army, Civil Administration and other relevant agencies for further intimation to the public about the quantum of flood water and its effect for making arrangement of evacuation. The operation of the breaching section will be intimated to the Army at least 12 hours in advance for making arrangements to shift the explosive to the breaching site. Similarly Civil Administration is to be informed about the operation of breaching section at least 12 hours in advance.

- The Deputy Commissioner, Wazirabad to make arrangement for the evacuation of the public within Left Marginal Bund. Similarly, the Deputy Commissioner, Gujrat to make arrangement for the evacuation of the public within Right Marginal Bund and the population likely to be affected in the route of spill water.
- Concerned Military authorities to keep ready for emergency operation.
- Concerned Police authorities to watch that no unauthorized cuts be made by public especially along Left Marginal Bund and Right Marginal Bund.
- Headquarters, 30-Engineers Corps, Gujranwala Cantonment for energizing the breaching section, when water level approaches to 743.00 mark at the critical gauge.

11.10 DETAILS OF COORDINATION WITH CIVIL ARMY AUTHORITIES

In case of high flood, hourly flood gauges will be passed to Civil as well as Army. These three Departments will remain in touch through Telephone and wireless system.

11.11 PARALLEL COMMUNICATION ARRANGEMENTS

Telephone and wireless system are the parallel arrangements for communication.

11.12 INDEX PLAN

Index Plan of breaching section is attached at page No.8.

Executive Engineer	**Superintending Engineer**	**Chief Engineer**
Khanki Division LCC (E) Khanki	Lower Chenab Canal East Circle Sheikhupura	Irrigation Faisalabad Zone, Faisalabad

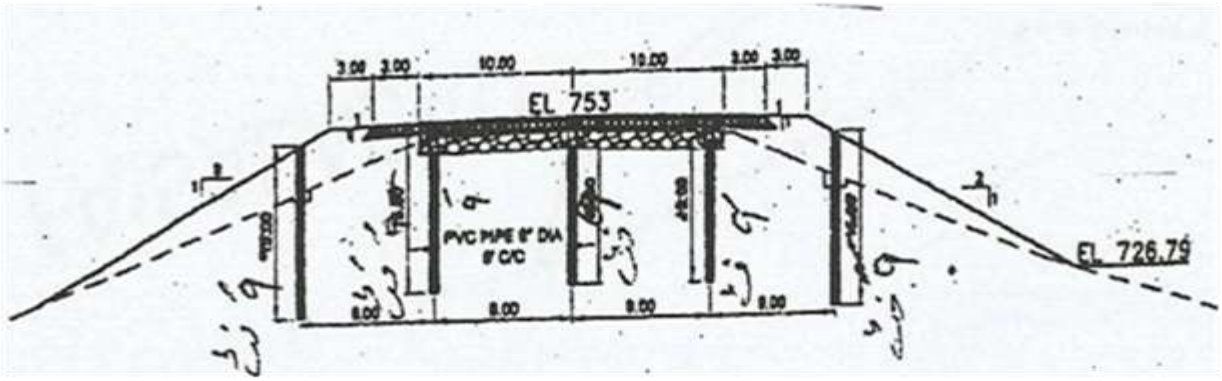
PLAN OF BREACHING SECTION

KHANKI BARRAGE

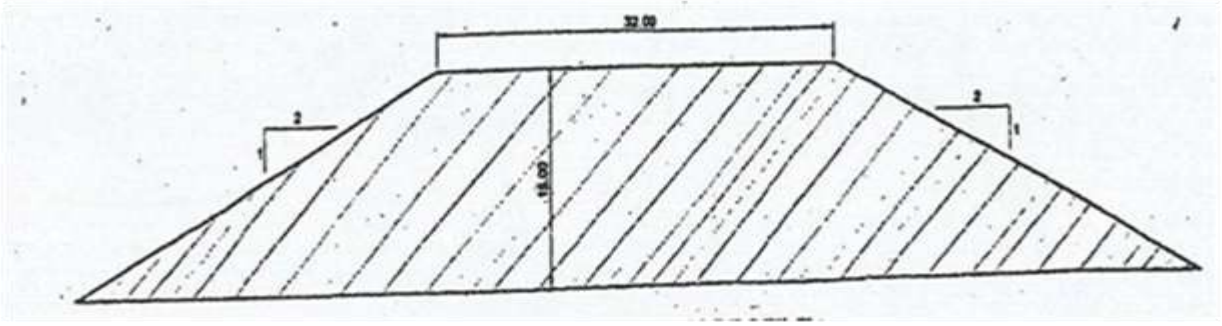
Revised June, 2017

Location	Length of Breach	Depth of Cut	No. of Cuts	Soil Type	Compaction
Khanki Headworks R.M.B RD 3 to RD 4	1000 Ft.	9 Ft.	3 Ft.	Sandy Clay	Natural

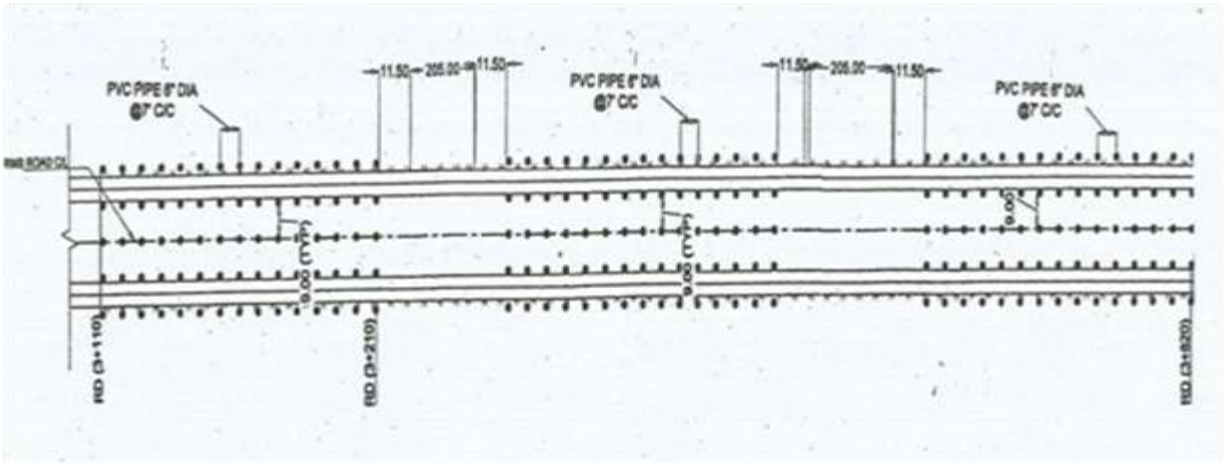
SECTION SHOWING HOLES DRILLED



BREACHING SECTION PROFILE



PLAN SHOWING FIRING ARRANGEMENTS



CHAPTER-12

VULNERABLE SITES ON FLOOD BUNDS/STRUCTURES

12.1 APPREHENDED BREACH SITES IN FLOOD BUNDS / STRUCTURES

The following reaches there are very likelihood under the direct hit of flow that requires extra arrangements of watching and flood fighting material at the following sites in case of discharge at Khanki Head works above 6 Lac.

(I)RIGHT MARGINAL BUND INCLUDING BREACHING SECTION

RD.0+000 to RD.15+700,

(II) LEFT MARGINAL BUNND

RD.0+000 to 15+500

(III) DOWNSTREAM BARRAGE LEFT SIDE SPUR NO.01

RD.: 0+000,

(IV) DOWNSTREAM BARRAGE LEFT SIDE SPUR NO.02

RD: 0+000

(V) SPUR NO 2 NEAR BURJ CHEEMA

RD: 0+000

Route map of vulnerable reaches in case of breaches to LMB or RMB is attached as under for reference.

12.2 OPERATION OF BREACHING SECTIONS

In 2025, the Khanki Barrage entered into Exceptionally high flood on 27.08.2025 at 04:00 AM and remained in Exceptionally high flood condition for 33 hours. An Exceptionally High Flood (10,85,750 Cusecs) was received at Khanki barrage at 3:00 PM on 27.08.2025. At that time, the critical gauge installed on the LMB at RD 5+000 recorded a water level of 740.70 feet instead 743.00 feet. Therefore, the breaching section was not operated, as the critical gauge was not attained.

12.3 BREACHES DUE TO RISING OF FLOOD WATER, DETERIORATION OF FLOOD BUNDS.

1 REPAIRING / RESTORATION OF SPUR E IN R.M.B SECTION AT KHANKI BARRAGE.

2. REPAIRING / RESTORATION OF STONE APPRON OF GH LOWER IN R.M.B SECTION AT KHANKI BARRAGE.

3. REPAIRING / RESTORATION OF OLD GUIDE BUND AT KHANKI BARRAGE.

4. RESTORATION OF BREACH OF SPUR GH MAIN BETWEEN RD 5+000 TO 6+000

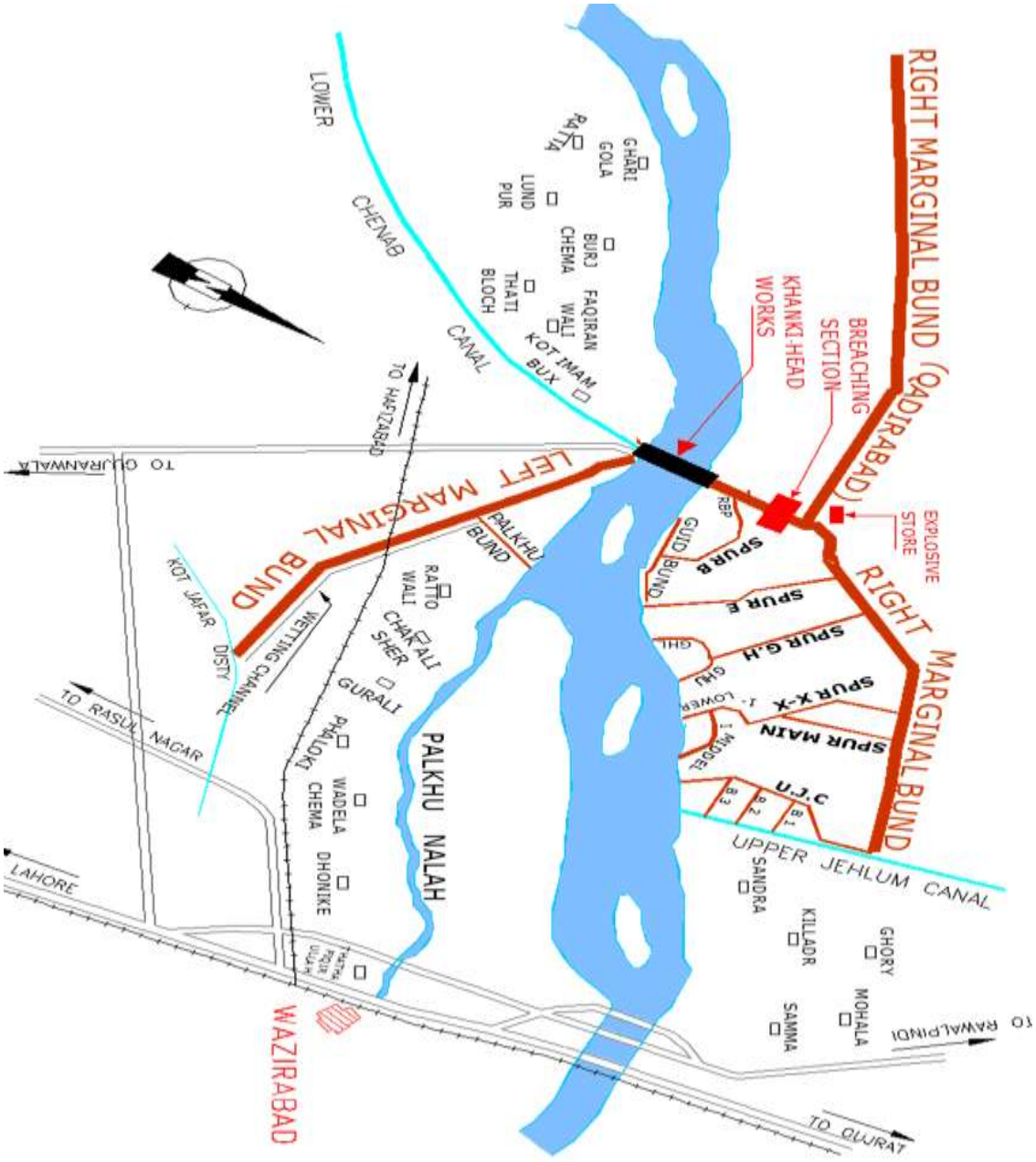
CHAPTER-13

EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITES

SITE NO. 1
Right Marginal Bund

RD 0+000 TO RD 15+700

13.1 PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS



13.2 DETAIL OF VILLAGES ABADIES LIKELY TO BE AFFECTED

The Following infrastructures like electric, telephone installations, abadies, roads, buildings etc. will be affected for such breach / relief cut.

I. VILLAGES

Kot Muj Din, Kot Qatib Din, Kot Tali Sahib, Qasimabad and Nathu Kot etc.

PROVISION OF LIST OF EVACUEES TO CIVIL ADMINISTRATION

Right Side of Khanki Headworks				
Sr. No.	**Name of Village**	**Location**	**No. of Houses**	**Population**
1	Kot Muj Din	Left side of RMB	210	990
2	Kot Kutab Din	Left side of RMB	520	2800
3	Kot Tali Sahib	Left side of RMB	95	450
4	Qasimabad	Left side of RMB	351	1352
5	Nathu Kot	Left side of RMB	65	350

II. TOWNS.

RIGHT SIDE OF KHANKI HEADWORKS

Shadiwal

13.3 STRATEGY AND ACTION TAKEN

13.3.1 ARRANGEMENTS

The following arrangements will be made: -

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

Following are the camps sites at Right Marginal Bund: -

i. RD 0+000
ii. RD 15+700 (During medium/High Flood only).
iii. RD 9+000 of E-Spur (During very high Flood/Exceptionally high flood only).
iv. RD 7+590 tail of B- main bund (During very high Flood/Exceptionally high flood only).

13.3.3 DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMP SITES

Camp No.	Location	Officer (Name/Designation /Mobile No)	Official (Name/Designation /Mobile No)
1	RD; 0+000 of RMB	**RIZWAN KHAN** Sub Engineer, 0308-8626376	Muhammad Nadeem Beldar 0343-4467125
2	RD; 15+700 of RMB	**FAHAD IQBAL,** Sub Engineer, 0345-5865989	Muhammad Gulfam , Beldar 0347-6810285
3	RD; 9+000 of E-Spur	**Ihtisham ul haq** Sub Enginner, 0306 0626421	Muhammad Raiz 0344 6409559
4	RD; 7+590 tail of B-main bund	**Ihtisham ul haq** Sub Enginner, 0306 0626421	Shafqat Ali Beldar 0348 8744525
ESTABLISHMENT OF FLOOD FIGHTING CAMP AT CHENAWAN HEAD			
1	RD; 40+200 of LCC at Chenawan head	**Syed Uzair Bukhari** Sub Enginner, 0341 0644638	Naseer Ahmad Beldar 0342 6068905

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Khanki Division has 2 No. Tractor and Machinery of Excavator Division Sheikhupura / Lahore.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

Tractor Trollies are available with local contractors who will arrange on the call of in emergency for transportation of labour and material. The Civil Administration of

Wazirabad. District will be asked for requisite transport for carriage of emergent material if not available from local sources in case of emergency.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED FOR SITE NO.1

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE.

Sr. No.	Items	Unit	Required Quantity	Available Quantity	Balance Quantity	Remarks
1	Shouldari/Tent 18x36	No	01	1	0	
2	Chairs	No	06	6	0	
3	Table 4x3'	No	01	2	-1	
4	Generator (2-5 KVA)	No	01	0	01	
5	Pedestal Fans 24"	No	01	0	01	
6	Charpois	No	02	0	02	
7	Symbolic Jackets	No	50	0	50	
8	Polyethylene Sheet 0.03 mm	Kg	100	0	100	
9	Bamboos (2.5" dia and 10 ft long)	No	100	0	100	
10	Water Cooler (30 Liter)	No	01	0	01	
11	Portable Umbrella	No	02	0	02	
12	Life Jackets	No	05	5	05	
13	Utensils (10 person serving)	No	01	0	01	
14	Jute 3. To 5 Cft Plastic bags 1.25 Cft	No	1000	100	900	Procurement is under process
15	Walkie Talkie Set	Sets	02	0	02	
16	Raincoats	No	10	2	8	
17	LED flood light 500 watt	No	10	3	7	
18	Extension Cable (10 ft) 7/44	No	02	0	02	
19	Rechargeable torches	No	20	5	15	
20	Kassi	Kg	20	10	10	
21	Axes	No	20	5	15	
22	G.I. Buckets	No	05	0	5	
23	7/44 cable	Feet	500	0	500	
24	Sutli	Kg	02	0	02	
25	Sewing Needles	No	10	0	10	
26	Emergency Medical Kit	No	1	0	01	
27	Wire crates (3x3x3) (only at those camps near river action and where reserve stock exists)	No	100	0	100	

13.4 DETAIL OF OTHER INFRASTRUCTURE LIKE ELECTRIC, SUI GAS, TELEPHONE INSTALLATIONS, ROAD NETWORK, OTHER BUILDING, CANALS AND DRAINAGE NETWORK

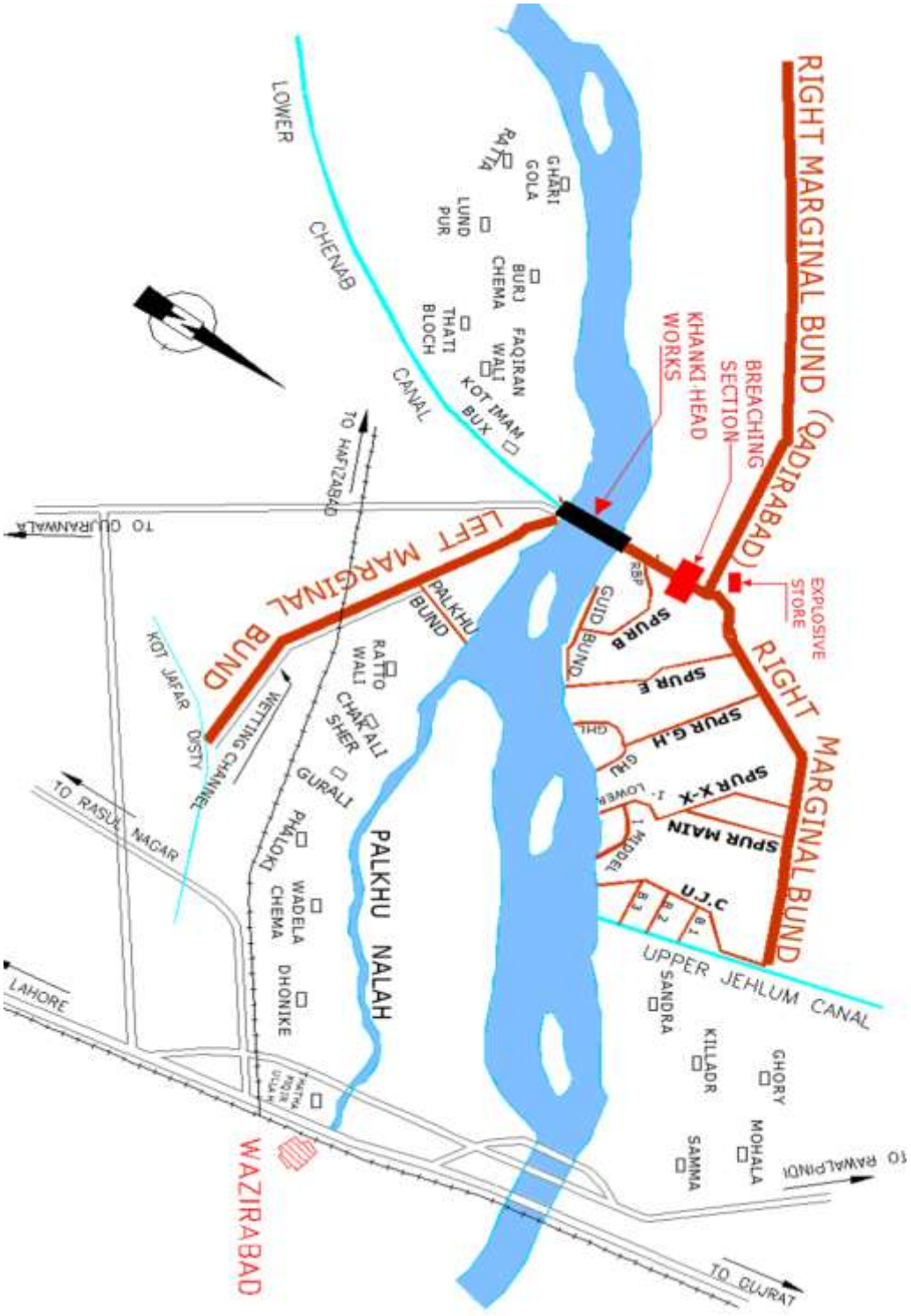
There is no other infrastructure like electric, Sui Gas, Telephone installations, road network, other building, Canals and drainage network in way of water coming through proposed breach site.

SITE NO. 2

Left Marginal Bund

RD 0+000 – 15+000

13.1 PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS



13.2 DETAIL OF VILLAGES ABADIES LIKELY TO BE AFFECTED

The Following infrastructures like electric, telephone installations, abadies, roads, buildings etc. will be affected for such breach / relief cut.

I. VILLAGES

Ranike, Ratowali, Khanki Head, Chak Ali Shair etc…

PROVISION OF LIST OF EVACUEES TO CIVIL ADMINISTRATION

Left Side of Khanki Headworks				
Sr. No.	**Name of Village**	**Location**	**No. of Houses**	**Population**
1	Ranike	Right side of LMB	420	1400
2	Ratowali	Right side of LMB	80	800
3	Khanki Head	Right side of LMB	700	3200
4	Chak Ali Shair	Right side of LMB	340	1700

II. TOWNS

LEFT SIDE OF KHANKI HEADWORKS

Saroki

13.3 STRATEGY AND ACTION TAKEN

13.3.1 ARRANGEMENTS

The following arrangements will be made: -

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

The following camps are at various places: -

TEMPORARY CAMP SITES

Following are the camps sites at Left Marginal Bund.

i. RD 6+200
ii. RD 15+500 (During exceptionally High Flood only).

13.3.3 DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMP SITES

13.3.4

Camp No.	Location	Officer (Name/Designation /Mobile No)	Official (Name/Designation /Mobile No)
1	RD; 6+200 of LMB	**SIKANDAR HAYYAT** Sub Engineer, 0300-0020307	Nisar Ahmad, Beldar 03456-4599351
2	RD; 15+500 of LMB	**SIKANDAR HAYYAT,** Sub Engineer, 0300-0020307	Muhammad Younas, Beldar, 0345-6237921

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Khanki Division has 3 No. Tractor and Machinery of Excavator Division Sheikhupura.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

Tractor Trollies are available with local contractors who will arrange on the call of in emergency for transportation of labour and material. The Civil Administration of Wazirabad District will be asked for requisite transport for carriage of emergent material if not available from local sources in case of emergency.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED FOR SITE NO.2

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

Sr. No.	Items	Unit	Required Quantity	Available Quantity	Balance Quantity	Remarks
1	Shouldari/Tent 18x36	No	01	1	0	Procurement is under process
2	Chairs	No	06	6	0	
3	Table 4x3’	No	01	02	-1	
4	Generator (2-5 KVA)	No	01	0	01	
5	Pedestal Fans 24”	No	01	0	01	
6	Charpois	No	02	0	02	
7	Symbolic Jackets	No	50	0	50	
8	Polyethylene Sheet 0.03 mm	Kg	100	0	100	
9	Bamboos (2.5" dia and 10 ft long)	No	100	0	100	
10	Water Cooler (30 Liter)	No	01	0	01	
11	Portable Umbrella	No	02	0	02	
12	Life Jackets	No	05	5	05	
13	Utensils (10 person serving)	No	01	0	01	
14	Jute 3. To 5 Cft Plastic bags 1.25 Cft	No	1000	100	900	
15	Walkie Talkie Set	Sets	02	0	02	
16	Raincoats	No	10	2	8	
17	LED flood light 500 watt	No	10	3	7	
18	Extension Cable (10 ft) 7/44	No	02	0	02	
19	Rechargeable torches	No	20	5	15	
20	Kassi	Kg	20	10	10	
21	Axes	No	20	5	15	
22	G.I. Buckets	No	05	05	0	

23	7/44 cable	Feet	500	0	500	
24	Sutli	Kg	02	0	02	
25	Sewing Needles	No	10	0	10	
26	Emergency Medical Kit	No	1	0	01	
27	Wire crates (3x3x3) (only at those camps near river action and where reserve stock exists)	No	100	0	100	

13.4 DETAIL OF OTHER INFRASTRUCTURE LIKE ELECTRIC, SUI GAS, TELEPHONE INSTALLATIONS, ROAD NETWORK, OTHER BUILDING, CANALS AND DRAINAGE NETWORK

There is no other infrastructure like electric, Sui Gas, Telephone installations, road network, other building, Canals and drainage network in way of water coming through proposed breach site.

CHAPTER-14

ACTION PLAN

14.1 RE-SHUFFLING/RECOUPING PLAN OF RESERVE STONE DEPARTMENTALLY

Sr. No.	Name of Structure	Sanctioned Limit of Reserve Stock of Stone (Lac Cft)	Stone Available at Site (Lac Cft)	Balance Stone Required (Lac Cft)
Total		**7.500**	**6.180**	**1.32**
1	Upstream Left Bells Bund (Stone Yard)	1.500	3.649	-2.149
2	U/S Right Bells Bund	0.500	0.834	-0.334
3	Right Guide Bund	0.500	0.224	0.276
4	D/S Right Bell Bund	0.500	0.000	0.500
5	Groynes and Weir	0.500	0.000	0.500
6	Palkhu Spur	1.000	0.228	0.772
7	Spur "E"	0.500	0.037	0.463
8	Spur G.H Upper	0.250	0.159	0.091
9	G.H Lower	0.500	0.184	0.316
10	"I" Middle	0.250	0.154	0.096
11	"I" Lower	0.250	0.309	-0.059
12	"B" 1	0.250	0.085	0.165
13	"B" 2	0.250	0.040	0.210
14	"B" 3	0.250	0.078	0.172
15	"B" 4	0.250	0.112	0.138
16	Spur "P"	0.500	0.000	0.500
17	Partition Bund	0.500	0.020	0.480
18	G.H Main	0.250	0.067	0.183

- No reshuffling / recouping of reserve stone are required as available quantity is more than 70 % which is sufficient.

14.2 DETAIL OF INLET/OUTLET CROSSING ALONG WITH CLOSING METHODOLOGY

There is one inlet between RD 2+000 – 3+000 of Right Marginal Bund and will be closed during flood.

14.3 DEPLOYMENT OF MACHINERY (NORMAL TO LOW FLOOD)

Attached at Page No.49.

14.4 DEPLOYMENT OF MACHINERY (MEDIUM TO HIGH FLOOD)

Attached at Page No.49.

14.5 DEPLOYMENT OF MACHINERY (HIGH TO EXCEPTIONALLY HIGH FLOOD)

Attached at Page No.50.

14.6 POLICE DEPLOYMENT PLAN

Sr. No.	Vulnerable sites used for illegal cuts during floods	Concerned Canal Division	Concerned Police Station and District	Police Personnel to be deployed		Remarks (If any)
				Inspection / SI/ASI	Constables	
1.	RD 4-5 Left Marginal Bund	Khanki Division	Ahmad Nagar Distt: Gujranwala	ASI 1 No.	4 No.	In case of high flood

14.7 DETAIL OF SYNTHETIC BAGS WITH CAPACITY OF 500 KG AND 1000 KG

1. Synthetic Bags with capacity 500 KG =3000 No
2. Synthetic Bags with capacity 1000 KG =1500 No.

1000 kg			500 kg		
Required (No.)	Available	Balance	Required (No.)	Available	Balance
1500	Nil	1500	3000	Nil	3000

Note. The balance quantity will be procured on subject to availability of funds before on set of flood season

14.8 DETAIL OF POLYTHENE SHEETS OF BLACK COLOUR TO PROTECT UPSTREEM SLOPE AGAINST WAVE ACTION AND TO CONTROL SEEPAGE THROUGH EMBANKMENT.

Polythene sheets of black color for protecting upstream slopes

Waves and control to seepage (Average 20 FT Width) 21000 Rft

Polythene sheets of black color for protecting upstream slopes Waves and control to seepage (Average 20 FT Width)		
Required Rft	Available Rft	Balance Rft
21000	Nil	21000

Note. The balance quantity will be procured on subject to availability of funds before on set of flood season

CHAPTER-15

BACKUP DIVISIONS

When the discharge at Khanki Barrage reaches to 6 Lac and above, the Executive Engineer Upper Gugera Division (Sheikhupura) will shift his camp at Khanki Barrage with all staff/establishment to assist Executive Engineer Khanki Division.

Executive Engineer	**Superintending Engineer**	**Chief Engineer**
Khanki Division LCC (E) Khanki	Lower Chenab Canal East Circle Sheikhupura	Irrigation Faisalabad Zone, Faisalabad

7.2 Watching Establishment Details

Sr. No.	Structure Name	Length (Miles)	Flood Limits							
			Normal Flood Season		Low Flood		Medium/High Flood		Very High/ Exp. High Flood	
			Men	Shift	Men	Shift	Men	Shift	Men	Shift
			1 Person/ 2 Mile (1 Shift)		1 Person/ Mile (1 Shift)		2 Person/ Mile (2 Shift)		5 Person/ Mile (3 Shift)	
1	Right Marginal Bund including breaching section.	6.73	3	1	6	1	12	2	30	3
2	Left Marginal Bund	4.2	2	1	4	1	8	2	20	3
3	Downstream Barrage Left Side Spur No. 1	1.5	1	1	1	1	2	2	5	3
4	Downstream Barrage Left Side Spur No. 2	1.5	1	1	1	1	2	2	5	3
	TOTAL :-	**-**	**7**		**12**		**48**		**180**	

7.3 Established Camps Details

Sr. No.	Structure Name	Length (Miles)	Vulnerable sites		No. of Camps Established Except Vulnerable Points		
					Normal Flood season/Low Flood	Medium/High Flood	Very High/Exp. High Flood
			Reach	No. of Camps	15 Miles	7 Miles	5 Miles
1	Right Marginal Bund including breaching section.	6.73	RD.0+000 to RD.15+700,	1	-	0	1
2	Left Marginal Bund	4.2	RD.0+000 to 15+500	1	-	0	0
3	Downstream Barrage Left Side Spur No. 1	1.5	0+000	1	-	-	-
4	Downstream Barrage Left Side Spur No. 2	1.5	0+000	1	-	-	-
5	SPUR NO 2 NEAR BURJ CHEEMA	1.5	0+000	1	-	-	-
Total				**5**		**0**	**1**

14.3 DEPLOYMENT OF MACHINERY (NORMAL TO LOW FLOOD)

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade (1 per 15 mile reach)
1	Right Marginal Bund including breaching section.	6.73	S.E shall allow deputation of one (1) excavator & four (4) Trolleys during low flood at camps/vulnerable points & LMB / RMB.		-	0
2	Left Marginal Bund	4.2			-	0
3	Downstream Barrage Left Side Spur No. 1	1.5			-	0
4	Downstream Barrage Left Side Spur No. 2	1.5			-	0
Total					-	0

14.4 DEPLOYMENT OF MACHINERY (MEDIUM TO HIGH FLOOD)

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade
			1 per 7 mile reach	4 per 7 mile reach	2 per 7 mile reach	1 per 7 mile reach
1	Right Marginal Bund including breaching section.	6.73	1	4	2	1
2	Left Marginal Bund	4.2	1	2	1	0
3	Downstream Barrage Left Side Spur No. 1	1.5	0	0	-	0
4	Downstream Barrage Left Side Spur No. 2	1.5	0	0	-	0
Total			**2**	**6**	3	**1**

14.5 DEPLOYMENT OF MACHINERY (VERY HIGH TO EXCEPTIONALLY HIGH FLOOD)

Sr. No.	Structure Name	Length (Miles)	Excavators		Trolleys	Dumpers	Tractor with Front blade	
			Very High Flood	Exp. High Flood	4 per 5 mile reach	2 per 5 mile reach	Very High Flood	Exp. High Flood
			1 per 5 mile reach	2 per 5 mile reach			1 per 5 mile reach	2 per 5 mile reach
1	Right Marginal Bund including breaching section.	6.73	1	3	3	2	1	2
2	Left Marginal Bund	4.2	1	2	3	1	1	2
3	Downstream Barrage Left Side Spur No. 1	1.5	0	1	1	0	0	1
4	Downstream Barrage Left Side Spur No. 2	1.5	0	1	1	0	0	1
5	LCC x-regulator at 40+000 Chenawan Head	-	0	0	0	0	0	0
Total			**2**	**7**	**8**	**3**	**2**	**6**

Note: - Payment for machinery and work charge employees will be subject to verification by TPM.