

GOVERNMENT OF THE PUNJAB
IRRIGATION DEPARTMENT
SARGODHA IRRIGATION ZONE
SARGODHA



FLOOD FIGHTING PLAN
2024

EXECUTIVE ENGINEER, BHALWAL DIVISION LJC, SARGODHA,
LOWER JHELUM CANAL CIRCLE, SARGODHA

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PART -----A

CHAPTER – 1

1. Salient features of Bhalwal Canal Division LJC

1.1. Location:

Bhalwal Canal Division falls in Chaj Doab, comprising part of Lower Jhelum Canal Sargodha, which off-takes from left bank of River Jhelum, having its jurisdiction, up to right bank of River Chenab, in District Mandi Bahauddin and Sargodha.

There are four Branch Canals and one Escape Channel in the jurisdiction of this Division, which are as under: -

Sr. No.	Channels	Reduced Distance (ft)		Discharge (Cs)
1	Northern Branch	0+000	170+000	2065
2	Southern Branch	0+000	104+300	1285
3	Southern Feeder	0+000	35+800	348
4	Khadir Feeder	0+000	117+220	365
5	Chenab Escape	0+000	63+000	400

Table 1 Salient features of Bhalwal Canal Division LJC

There are three Sub Divisions, controlled by the respective Sub Divisional Officers under the executive control of Executive Engineer Bhalwal Canal Division LJC.

Names and locations of Sub Divisional Offices are given below.

Sr. No.	Name of Sub Division	Location (Head Quarter)
1	Bhalwal Canal Sub Division	Bhalwal (Sargodha)
2	Hujjan Canal Sub Division	Uppi Canal Rest House, Tehsil Kot Momin
3	Bhabra Canal Sub Division	Hilalpur Canal Rest House, Tehsil Kot Momin

Table 2 Sub Divisional Offices of Bhalwal Canal Division

The network of four major canals namely Northern Branch, Southern Branch, Southern Feeder and Khadir Feeder systems is controlled by this Division to provide gravity flow perennial irrigation with various intensities viz 75% & 40% to feed an overall C.C.A 337670 acres. Discharge supplemented by river supplies from Mangla Dam reservoir through Lower Jhelum Canal, off-taking at Rasul Barrage commissioned in 1967.

1.2. General Description:

This Division falls in Chenab-Jhelum (Chaj) Doab. Detail description of its Canal Systems and River reaches are as per following.

1. Northern Branch System:

This Canal System off-takes from tail of Lower Jhelum Canal at Head Faqirian with designed discharge of 2065 Cs. Its jurisdiction starts from Head Faqirian village and consists of 21 No's irrigation channels.

2. Southern Branch System:

This Canal System off-takes from tail of Lower Jhelum Canal at Head Faqirian. Kirana and Lalian Distributaries off-take from Southern Branch Tail near Ghullapur Canal Rest House, i.e., RD 104+300. Khadir Feeder off-takes at RD 53300/L of Southern Branch at Head Wan.

3. Southern Feeder System:

This Canal System off-takes from tail of Lower Jhelum Canal at Head Faqirian. Southern Feeder irrigates the Channels of Hujjan Canal Sub Division. Its jurisdiction starts from Head Faqirian.

4. Khadir Feeder System:

This Canal System off-takes from Southern Branch, RD 53300/L, at Head Wan with designed discharge of 365 Cs. Its jurisdiction starts from head Wan. It consists of 10 No's, irrigation channels.

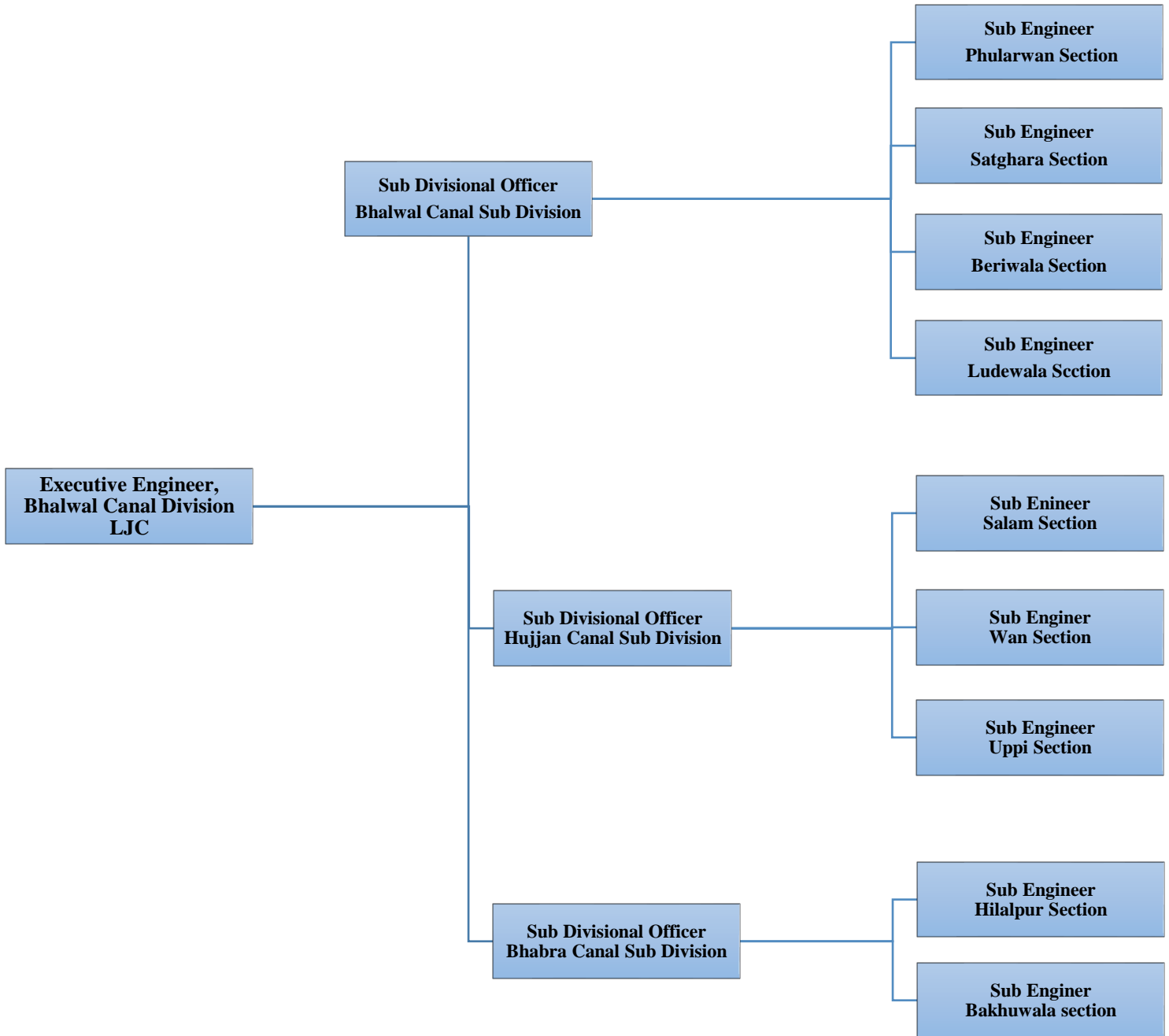
This System is protected by Kot Naja Flood Bund which starts near village Hilalpur and ends by joining at RD 66000-67000 of Khadir Disty and L.B.N Drain.

Total length of the bund is 132500 ft. The KNFB from RD 0+000 to 91+440 on the upstream side of Motorway, falls in the jurisdiction of Bhalwal Canal Division while the remaining portion from RD 91+440 to 132+500 on the downstream side of Motorway, falls in the jurisdiction of Kirana Canal Division.

This flood Bund protects the Khadir Irrigation System, agriculture lands, local Abadie's and infrastructures from floods in River Chenab, on right side of River.

1.3. Administrative Setup:

Administrative Plan of Bhalwal Division LJC



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CHAPTER - 2

2. Flood Protection and River Training Works

2.1. Design Parameter of Training Works:

The flood protection bund & river training works falling within jurisdiction of this Division are as under:-

I- Flood Embankment:

- a) Kot Naja Flood Bund RD 0-91+440 (18.288 Mile)

II- River Training Work:

- a) 9 No Solid Stone Studs at Mauza Muradwala & Sikdey

Design Parameters:

I- Flood Embankment:

Description	Length	Top Width (ft)		Side Slope		Year of Construction
		(Mile)	RD	Width	R/S	
Kot Naja Flood Bund RD 0+000 -91+440	18.288	0-91440	25	3:1	2:1	1905

I- River Training Works:

9 No Solid Stone Studs at Muradwala & Sikdey				
Description	Length (ft)	Top Width (ft)	Side Slope	Year of Construction
Stud No.1	50	15	1:01	2020
Stud No.2				
Stud No.3	20			
Stud No.4				
Stud No.5				
Stud No.6				
Stud No.7				
Stud No.8				
Stud No.9				2018

2.2. Location Map:

Location Map is attached at page - 35

CHAPTER - 3

3. Brief History of Past Flood Events:

Floods disrupt the social system of countries and cause enormous economic losses to both urban and rural communities. During flood of 1995-96, the river Chenab spilled with 644397 & 853231 cs discharges respectively along Kot Naja Flood Bund in reaches RD 63000-90000, no damages occurred.

In 1997 the river Chenab was at its peak on 28.08.1997 with discharge of 873443 cs. On 13-14.03.2007, heavy rains in catchment area in the territory of Jammu & Kashmir caused high flood in river Chenab, this unexpected flood was recorded as 289000 Cs.

During flood of 2014, the spill of river Chenab was 903504 cs. Discharges also touched Kot Naja Flood Bund in reach RD 49000 to 71000 and damages occurred in reach RD 70000-71000, which were filled with the help of dozers of Agriculture Department.

During flood season 2017, the site condition of river flow U/S and D/S Motorway has been physically changed, with threat of flood on U/S River near village Sikdey & Muradwala etc., & D/S Motorway had been diverted, the change of main stream on right side rapidly eroded the valuable agriculture land, houses and moved towards “Imambargah. So, it created emergent situation at site. Keeping in view the emergency the matter was put for expert opinion of Departmental Committee and meeting was held on 11.07.2017. The work namely “**Protection of Abadie’s of Mouza Muradwala & Sikdey from erosive action of river Chenab in Tehsil Kot Momin District Sargodha**” was started, on 29.07.2017, after approval from the Worthy Secretary Irrigation Lahore on 24.07.2017, under Para 2.89 of PWD Code. Later on, on the direction of the Worthy Secretary, Irrigation vide canal wire No.1404 dated 14.09.2014 the emergent work was stopped on 30.09.2017.

Similarly, during flood season 2018, site condition was yet vulnerable. Main stream of river Chenab was flowing along the high edge i.e. very close to “Imambargah”, Due to this trend, the Abadie’s of Muradwala & Sikdey were under the threat.

Protection Of Abadie’s and Agriculture Land of Village Muradwala & Sikdey:

The trend of river Chenab is rightward before Motorway M-2 crossing near villages Muradwala & Sikdey. The main creek of river is flowing on outer edge of right bank and eroding precious agriculture land.

Proposals:

In Model study, notified vide No. SO(Flood) VII-3/2004 dated 12-07-2019, one Guide Wall in front of Muradwala & Sikdey and one Hockey Spur were proposed to protect the dwelling area and straightening the flow of River Chenab to control rightward drifting phenomenon.

Guide Wall in front of Muradwala & Sikdey:

U/S concave Portion	=	700 ft
Straight Portion	=	900 ft
D/S Concave Portion	=	400 ft

CHAPTER - 4

4. Design Data, Historic Peak Flood Data and Previous Five Years Flood Data of Head Works/ Barrages and or other Control Points

4.1. Flood Limits:

Flood limits of river Chenab are as below: -

Head Works	Lac Cs				
	Low	Medium	High	Very High	Exceptionally High
Marala	1.00 to 1.50	1.50 to 2.00	2.00 to 4.00	4.00 to 6.00	More Than 6.00
Khanki	1.00 to 1.50	1.50 to 2.00	2.00 to 4.00	4.00 to 6.00	More Than 6.00
Qadirabad	1.00 to 1.50	1.50 to 2.00	2.00 to 4.00	4.00 to 6.00	More Than 6.00
Source: Federal Flood Commission Islamabad					

4.2. Time Lags of Floods:

Following are the times lags for high flood condition in river Chenab: -

Location		Distance (KM)	Time Lags (Hour)		Remarks
From	To		Range	Indicative Average	
Marala	Khanki	56	10-14	12	i) Indicative average time lag values may vary in view of condition/factors prevalent at the time of flood flows. ii) These values are for high flood conditions and may be used by the concerned agencies for rescue/evacuation purpose.
Khanki	Qadirabad	30	6-10	7	
Qadirabad	Miana Hazara	40	-	12	
Maina Hazara	Chiniot Bridge	80	-	24	
Qadirabad	Trimmu	214	60-84	72	
Source: Federal Flood Commission Islamabad					

4.3. Highest Floods:

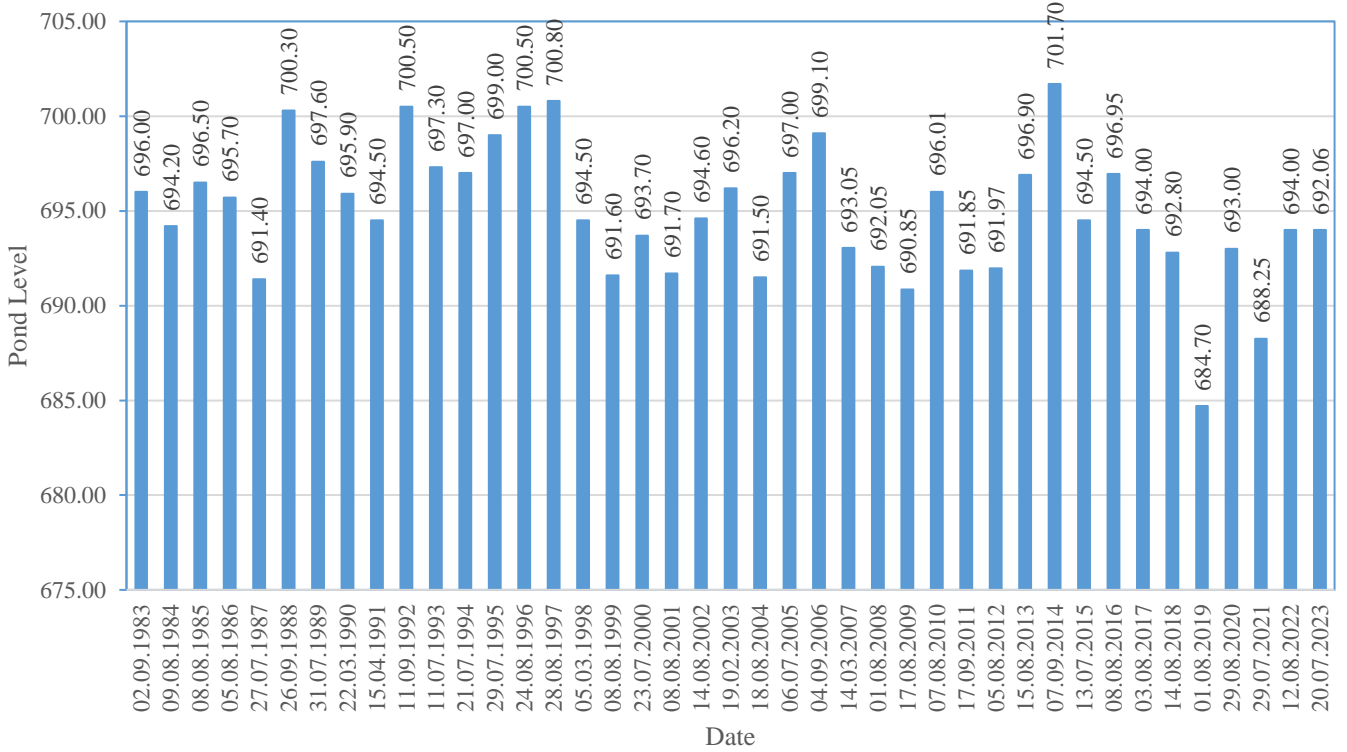
The highest Flood discharges recorded downstream Qadirabad Barrage during last five years as under: -

Year	D/S Qadirabad Discharge (Cs)
2019	159544
2020	258954
2021	167812
2022	193577
2023	185749

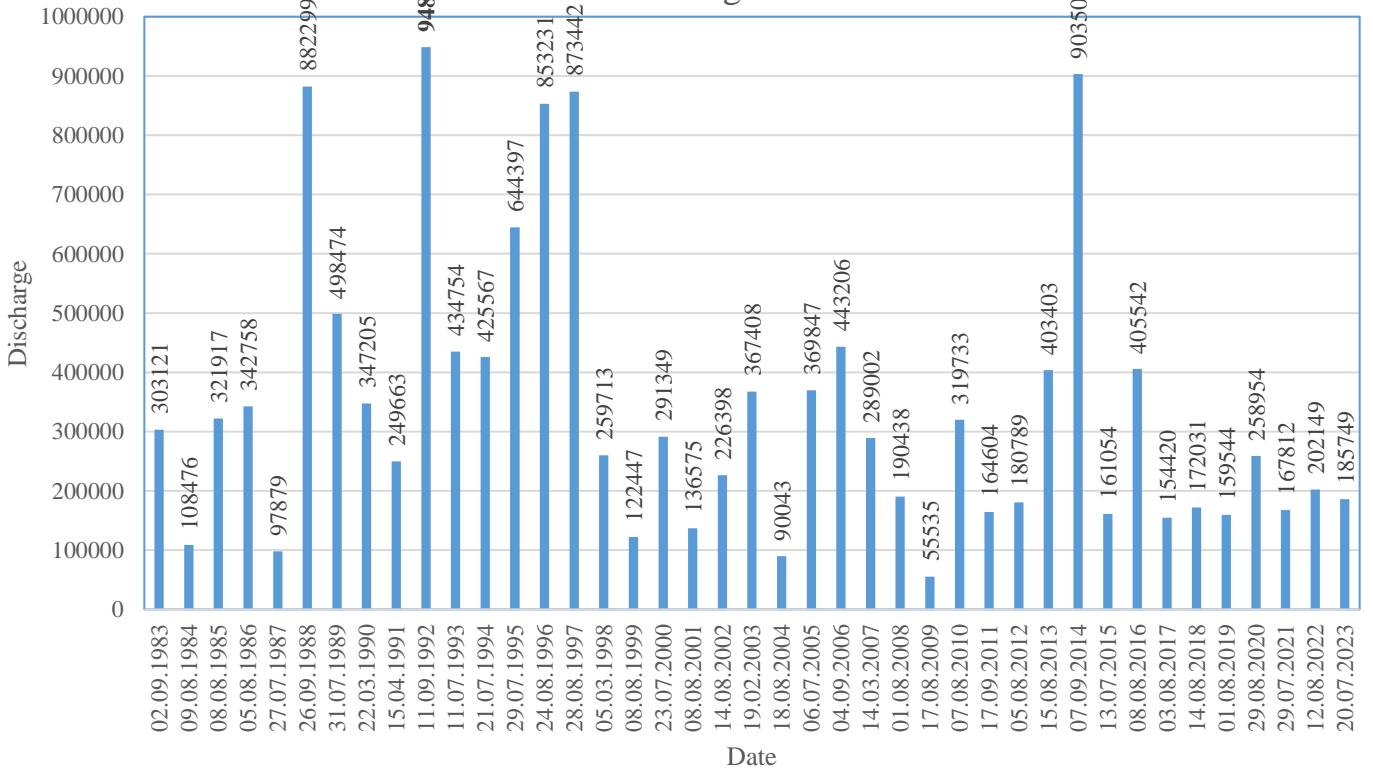
4.4. Peak Discharges:

Date	Discharge (Cs)	Pond Level (ft)
Downstream Qadirabad Barrage		
02.09.1983	303121	696.00
09.08.1984	108476	694.20
08.08.1985	321917	696.50
05.08.1986	342758	695.70
27.07.1987	97879	691.40
26.09.1988	882299	700.30
31.07.1989	498474	697.60
22.03.1990	347205	695.90
15.04.1991	249663	694.50
11.09.1992	948530	700.50
11.07.1993	434754	697.30
21.07.1994	425567	697.00
29.07.1995	644397	699.00
24.08.1996	853231	700.50
28.08.1997	873442	700.80
05.03.1998	259713	694.50
08.08.1999	122447	691.60
23.07.2000	291349	693.70
08.08.2001	136575	691.70
14.08.2002	226398	694.60
19.02.2003	367408	696.20
18.08.2004	90043	691.50
06.07.2005	369847	697.00
04.09.2006	443206	699.10
14.03.2007	289002	693.05
01.08.2008	190438	692.05
17.08.2009	55535	690.85
07.08.2010	319733	696.01
17.09.2011	164604	691.85
05.08.2012	180789	691.97
15.08.2013	403403	696.90
07.09.2014	903504	701.70
13.07.2015	161054	694.50
08.08.2016	405542	696.95
03.08.2017	154420	694.00
14.08.2018	172031	692.80
01.08.2019	159544	684.70
29.08.2020	258954	693.00
29.07.2021	167812	688.25
12.08.2022	202149	694.00
20.07.2023	185749	692.06

Pond Levels



Discharges



CHAPTER - 5

5. Flood Fighting Strategy

In view of the experience of past year's floods history, constant watch is required during the flood season, great care and caution will be required for fixation of appropriate relief spots for flood fighting on different Canals, flood bunds and spurs.

Canal System:

Khadir Feeder System runs parallel to River Chenab. This system up to RD 67+000 of Khadir Disty is protected from the spill of river by Kot Naja flood bund. The Branch and other allied channels on left side always remain under threat of river spill and require continuous watching. The Khadir Feeder System comprises of following canals.

Sr. No.	Channel Name	Head Discharge (Cusecs)	Off-Taking RD	Tail RD	Mileage
1	Khadir Feeder	365	53+300/L SB	117+220	23.44
2	Bhabra Disty	18.78	12+500/R KF	28+000	5.6
3	Dhingran Minor	4	17+000/R Bhabra Disty	5+820	1.16
4	Maira Disty	4.5	35+097/R KF	13+316	2.66
5	Mamrana Disty	5	61+000/L KF	10+670	2.13
6	Naseerpur Disty	7	66+740/R KF	32+650	6.53
7	Midh Disty	3	66+740/R KF	16+900	3.38
8	Jallop Disty	6.25	79+900/R KF	14+550	2.91
9	Badin Disty	6.25	105+517/R KF	23+050	4.81

Camp/ Sites:

The Department proposed to install camp stations for protection of irrigation canals on Kot Naja Flood Bund at RD 31+800, RD 85+000 and at Sikdey-Muradwala.

On Bunds, Spur & River Training Works

Description	Reach RD	Length (Mile)	Battle Station
Kot Naja Flood Bund	0-40000	8	RD 31800
	40000-91440	10	RD 85000
9 No. Solid Stone Studs	At Sikdey Muradwala		

The Sub Divisional Officer, Bhabra Sub Division will be the overall in-charge for operation of Kot Naja Flood Bund, Channels on Khadir Feeder and 9 No. Solid Stone Studs.

- Above mentioned camps will be installed on the sites for supervision of the protection activities during emergency. For all spots sufficient articles of stock items will be available in all these camps.
- There are provisions for engagement of work charge establishment to supplement the efforts thought regular establishment.
- Sub Divisional Officer, Hujjan Sub Division will remain in touch with Flood Control Office, during Flood period after receiving warning that the river is in high flood, he will immediately shift his headquarter to Kot Naja Flood Bund at RD 850000 and assist Sub Divisional Officer, Bhabra in flood protection operation.

- Executive Engineer Bhalwal Canal Division is fully competent to change duty of any Officer/Official.

Following channels are directly affected by the river Chenab spills. The channels of Kirana Division function as flood embankment and protection to the towns, Abadie's, crops and other infrastructure, against the flood. The reaches of channels which are affected by river spills and where the channels function as flood bunds are: -

Sr. No.:	Description	Reach RD	Length (Mile)
1	Khadir Feeder	35000-117000	8
2	Mamrana Disty	0-10670 (Tail)	2.13
3	Midh Disty	0-16900 (Tail)	3.38
4	Badin Disty	0-23050 (Tail)	4.81

In view of vulnerable location of Channels, being in the flood plain, it is essential to take up flood preparedness activities like strengthening weak and ghat sites, clearances of jungle, shrubs from banks and slopes and making them fit to face the ensuing floods. Therefore, a gang of one man per mile is employed from 1st June to 30th September, in addition to existing establishment of one Beldar in six miles length of canal.

I- **Normal Flood Discharge Below 100000 Cs:**

No extra labor will be employed. The labor arranged for preparedness will continue as such.

II- **Low Flood Discharge 100000-150000 Cs:**

No extra labor will be employed. The flood water flows within river bank, no extra labor will be employed.

III- **Medium Flood Discharge 150000-200000 Cs:**

In Medium flood stage, **two men / mile / shift for three shifts in a day.**

IV- **High Flood Discharge 200000-400000 Cs:**

The flood water spills out and inundates the low-lying areas and touches the flood bund. The watching is necessary to be arranged. Therefore, **four men / mile / shift for three shifts in a day** are employed, including the existing gang, for watching purpose.

V- **Very High Flood Discharge 400000-600000 Cs:**

All activities will remain as such. The watching establishment will be raised to two men per mile on channels and **six men / mile / shift for three shifts in a day** on Kot Naja Flood Bund.

VI- **Exceptionally High Flood Above 600000 Cs:**

This stage warrants alarming situation. The watching labor will be raised two men per mile on channels and **six men / mile / shift for three shifts in a day** on Bund. On receipt of exceptionally high flood warning, Deputy Collector, Bhalwal along with concerned Zilladars and Canal Patwaris will shift their camp at Hilalpur Rest House.

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CHAPTER – 6

6. Flood Damages Restoration Works

The overall condition of flood protection infrastructure was satisfactory. However, no any damages to houses/lives have been reported. River erosive action was observed near Sikdey Muradwala Muaza along right Bank of river Chenab Upstream Motorway M-2 Bridge, i.e., Studs No. 1 & 2 partially damaged. Tender process and acceptance of the repair work has been issued to the contractor and work will be completed before the flood season 2024.

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CHAPTER - 7

7. Flood Fighting Watching Arrangements

7.1. Pre- Flood Arrangement:

Sr. No.	Activities	Target Date	Compliance Report
I.	Preparation of Flood Fighting Plan.		
	a) Submission of Draft Divisional Plans by Zonal Chiefs to Chief Engineer Drainage & Flood (after scrutiny by SEs/CEs).	01.03.2024	Submitted
	b) Review by Chief Engineer D & F.	31.03.2024	Review & corrected by CE & D&F Lahore vide No. dated 20/03/2024
	c) Final Submission of Flood Fighting Plans	15.04.2024	
II	Inspection of Flood Infrastructure.		
	By XENs	15.03.2024	11.04.2024
	BY SEs/CEs)	31.03.2024	SE: 15.03.2024 / CE: 11.04.2024
	By Departmental & Army Teams	31.03.2024	14.03.2024
III	Identification of encroachments on bunds and spurs to the civil administration.	31.03.2024	No encroachments on flood bund / spur/studs
IV	Painting Gauges, RD Marks, Data boards and repair to flood bunds etc.	31.05.2024	Will be completed within target date
V	Replenishment of reserve stock of stone and flood fighting materials.		
	a) Identification of Needs	28.02.2024	
	b) Funding / Procurement Arrangements	15.03.2024	Estimate under preparation
	c) Procurement, stacking, prescribed field checks.	31.05.2024	
VI	Installation of wireless sets	15.06.2024	Will be installed within target date
VII	Opening of Zonal flood calls		
	a) Duty rosters.	01.06.2024	Will be issued up to target date
	b) Operative	15.06.2024	Will be operative within target date

Structure wise Detail of Reserve stock of Stone

_____ **NIL** _____

7.2. Watching Establishment:

Labor:

Manpower will be engaged during the flood season on work charge basis for watching and general maintenance of channel and flood works.

- During Normal stage, **one man / mile / shift for two shifts in a day.** (No extra labor will be employed. The labor arranged for preparedness will continue as such).
- During Low flood stage, **one man / mile / shift for two shifts in a day.** (The flood water flows within river bank, no extra labor will be employed).
- In Medium flood stage, **two men / mile / shift for three shifts in a day.**
- During High flood stage, **four men / mile / shift for three shifts in a day.**
- During very high flood stage of 6.00 Lac Cusecs discharge, **six men / mile / shift for three shifts in a day.**

After every three miles there will be a Mate and for every five miles there will be a Mistry in addition to Mate to supervise the work of Beldars.

Labor During Emergency:

- Man power will be arranged by the respected Deputy Commissioner in Case of emergency to meet with situation.
- 4 No dozers and 6 Nos tractors trollies with 2 front blade tractors with P.O.L will be arranged by the Agriculture Department through concerned Deputy Commissioner in District Sargodha.
- S.H.O of concerned Police Station will assist Irrigation Department.

Watching Establishment											
Sites	Length (Miles)	Flood Limits									
		Flood stage									
		Normal		Low		Medium		High		Very High	
		1 Man/mile/shift		1 Man/mile/shift		2 Men/mile/shift		3 Men/mile/shift		6 Men/mile/shift	
		Men	Shifts	Men	Shifts	Men	Shifts	Men	Shifts	Men	Shifts
Kot Naja Flood Bund RD 0-91440	18.288 Say = 18.5	No extra labor will be employed		The flood water flows within river bank, no extra labor will be employed		74	2	167	3	333	3
9 No. solid stone studs at Sikdey & Muradwala	(9 Studs) Say = 1					4	2	9	3	18	3
Total		2 shifts / day		2 shifts / day		78	2 shifts / day	176	3 shifts / day	351	3 shifts / day

7.3. Arrangement at Sensitive Sites:

Following are the main spots where watching camps will be established on temporary basis.

- Kot Naja Flood Bund RD 31800.
- Kot Naja Flood Bund RD 85000.
- 9 No. Solid Stone Studs at Sikdey Muradwala.

7.4. Watching Materials:

Following materials shall be kept at each watching hut/ Camp (The material will be shifted to watching huts as soon as the intimation of Medium/High Flood limit is received.

Sr. No.:	Name Of Item	Unit	Total Quantity Required (1 No Watching Hut)	Available Quantity For 2 No. Watching Huts	Balance Quantity Required For 3 No. Watching Huts	Status Of Arranging/ Purchasing Balance Quantity
1	Axes	No	5	11	4	1- Kot Naja Flood Bund RD 31800
2	Bamboos 8' to 10' (for watching arrangements)	No	20	5	55	
3	Baskets (Medium)	No	20	15	45	
4	Buckets Plastic (Medium)	No	5	0	15	
5	Torches (Medium) Rechargeable	No	3	9	0	
6	Chouldaries	No	1	1	2	2- Kot Naja Flood Bund RD 85000
7	E.G. Bags (50kg)	No	1000	25	2975	
8	Energy Severs (LED Bulb)	No	25	9	66	
9	Chairs (Plastic)	No	6	16	2	
10	Folding Table (Plastic)	No	1	3	0	3- At Muradwala & Sikdey
11	Funnels	No	2	0	6	
12	G.I Buckets	No	5	0	15	
13	Generator	No	1	1	2	
14	Hand Saws	No	2	5	1	
15	Handle for Kasi/Axes	No	10	5	25	Subject to availability of funds, the materials shall be purchased before start of flood season 2024
16	Holder for Lamp	No	30	0	90	
17	Kassi with Handles	No	5	8	7	
18	Kerosene Oil	Liter	30	0	90	
19	Killas (1.5' length)	No	100	0	300	
20	Life Jacket	No	5	17	-2	
21	M.Oil	Liter	4	0	12	
22	Manila Rope	P-Kg	2	0	6	
23	Match Boxes	No	10	0	30	
24	Munj/Patha/Trungers	No	100	0	300	
25	Needles (Big Size)	No	2	0	6	
26	Oil Extractors	No	1	0	3	
27	Petrol	Liter	50	0	150	
28	Rain Coats	No	5	6	9	
29	Steel Charpoy	No	3	6	3	
30	Sutli	P-Kg	10	0	30	
31	Switch/Plugs	No	12	0	36	
32	Umbrella (3' Dia)	No	5	13	2	
33	Wires 3/29	Meter	100	180	120	
34	Wooden Boards 10'x12' (Electric)	No	2	0	6	
35	Wooden Hammers	No	2	0	6	
36	Banner (Flood Watching Camp)	No	2	6	0	
37	Presentation Board	No	1	1	2	
38	Pedestal Fan	No	1	0	3	
39	Plastic Can (Capacity = 4 Liter)	No	5	2	13	
40	Duty Jackets	No	10	16	14	

7.5. Arrangement for Sounding & Probing:

This item relates to Barrage/ Head Works Canal Davison.

7.6. Lighting Arrangement:

Lighting arrangements will be made available.

7.7. Ration Arrangement:

The establishment and supervisory staff will make their own food arrangements. However, in the event of death of commodities, the Civil Authorities will be approached to store sufficient ration.

7.8. P.O.L. Arrangement for Vehicle:

Respective Deputy District Officer, (Revenue) will be requested by the Sub Divisional Officer in-charge to provide help some reserve at the nearest Petrol pumps to keep the vehicles on. Any obstruction found there will be pointed out by the Sub Divisional Officer.

7.9. Transportation:

In general, Civil authorities have never been able to spare any vehicle for us, but we have no other cushion to depend upon. It is therefore urged that Deputy Commissioner, concerned may please ensure availability of dependable vehicle from the pool of the district.

7.10. Law & Order:

Kot Naja Flood Bund falls within the administrative jurisdiction of District Sargodha. No solid stone studs Muradwala & Sikdey fall in District Sargodha. In case of observing any sort of law-and-order situation from the public sides, it shall immediately be contacted by the Sub Divisional Officer, concerned with the respective authority of civil administration to maintain the situation at site to avoid any mishap.

7.11. Medical Arrangement for Labor:

It is responsibility of District Government to provide medical facilities in flood areas where required.

7.12. Liaison with another Department:

Executive Engineer, Bhalwal Canal Division will keep liaison with the Civil and Army Authorities and will keep the Superintending Engineer L.J.C, Sargodha fully apprised of the flood situation.

7.13. Role of the Army:

Role of the Army is very important in case of any emergent situation arising due to high floods. A continuous liaison with the Army Authorities will be maintained during floods and if required necessary help will be sought.

7.14. Duties of Telephone Attendant:

Phone and cell No of all officers/ officials have been given in Flood Fighting Plan 2024 to make immediate contact at any emergency during flood.

Sr. No.	Name of Officials	Cell No.	Time	
			From	To
Shift-1	Muhammad Akram (Signallor)	0302-6728082	7:00 AM	3:00 AM
	Muhammad Aslam (Mate)	0345-8641747		
Shift-2	Shahid Imran (Gauge Reader)	0300-5468450	3:00 AM	11:00 PM
	Mudassar Ahmad (Gauge Reader)	0303-4438695		
Shift-3	Sultan Ali (Beldar)	0306-4995526	11:00 PM	7:00 AM
	Muhammad Arshad (Beldar)	0324-8706653		
Telephone Number of Telegraph Office Sargodha				
➤ Flood Emergency Center		0489-230408		
➤ Fax Number (Divisional Office)		0489-230410		

7.15. Wireless Arrangements:

Wireless system will be installed w.e.f. 15.06.2024 in the vehicle of Executive Engineer Bhalwal vehicle No GBA-453 and Sub Divisional Officer Bhabra Sub Division

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CHAPTER - 8

A. Detail of Encroachment:

Sr. No.	Total Encroachment	Removed	Remaining	Remarks
NIL				

B. Detail of Critical Encroachment:

Sr. No.	Total Encroachment	Removed	Remaining	Remarks
NIL				

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CHAPTER - 9

9. Duty Roster/ Flood Fighting Program

DUTY ROSTER OF KEY PERSONAL DURING FLOOD SEASON 2024																	
Site	Length	Stage-I Discharge (Lac Cs)	Labor Required	Labour For Watching Be Deputed (Per Shift)		Stage-II Discharge (Lac Cs)	Labour Required	Labour For Watching Be Deputed (Per Shift)		Stage-III Discharge (Lac Cs)	Labour Required	Establishment To Be Deputed (Per Shift)				Stage-IV Discharge (Lac Cs)	Labour Required
				MATE	BELDAR			MATE	BELDAR			SDO	SBE	MATE	BELDAR		
Kot Naja Flood Bund RD 0-91440	18.288 Say =18.5	1.5 to 2.0 (Medium Flood)	Two Men/mile/shift for Two shifts / day & night	12	62	2.0 to 4.0 (High Flood)	Three Men/mile/shift for Three shifts / day	27	140	4.0 to 6.0 (Very High Flood)	Six Men/mile/shift for Three shifts / day	Hamza Qasim Sub Divisional Officer (0324-9724030)	Umar Farooq SBE Bakhwala (0347-6304535)	56	277	6.0 to Above	Establishment will be deputed as per Stage III (One receipt of exceptionally high flood warning, Deputy Collector, Bhalwal along concerned Zilladars and Canal Patwaris will shift their camp at Bakhwala Rest House)
9 No Solid stone studs at Sikdey Muradwala	Stud 1 = 50 Stud 2 = 50 Stud 3 = 20 Stud 4 = 20 Stud 5 = 20 Stud 6 = 20 Stud 7 = 20 Stud 8 = 20 Stud 9 = 20			0	4			0	9				Hafiz M. Mujahid SBE Bakhwala (0347-8966638)	0	18		
Total		2 shifts / day		78		3 shifts / day		176		3 shifts / day		351					

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CHAPTER - 10

10. Emergency Telephone Nos

Sr. No.	Name of Post & Designation	Telephone / Cell. No	
		Office	Residence
1	Minster Irrigation & Power Department, Punjab Lahore.	042-99212809	
		042-99211761	
		Fax, 042-9921810	
2	Secretary Irrigation Department, Punjab Lahore	042-99212117	042-99200285
		042-9921218	
		Fax,042-99212116	
3	Chief Engineer, Sargodha Irrigation Zone, Sargodha.	048-9230445	0333-6941690
		Fax,048-9030414	048-9230451
4	Flood Emergency Officer Sargodha Irrigation Zone Sargodha.	048-9230449	0300-6363739
		Fax, 048-9230414	
5	Chief Engineer Drainage and Flood Zone Lahore	042-9923351	0301-8448709
		Fax, 042-99230731	
6	Director, Flood Drainage and Flood Zone Lahore	042-99233552	0300-6999490
7	Deputy Director, Drainage and Flood Lahore	042-99230282	-
8	Flood Warning Center Jail Road Lahore	042-99205371	-
		Fax,042-99205372	
9	Superintending Engineer Lower Jhelum Canal Circle Sargodha	048-9230413	048-9330463
		Fax, 048-9230832	0300-7743313
10	Superintending Engineer Drainage Circle Sargodha	048-9230450	-
11	Executive Engineer Sargodha Division LJC Sargodha	048-9230409	-
12	Executive Engineer Kirana Division LJC Sargodha	Fax,048-9230918	0345-5165764
		048-9230399	
13	Executive Engineer Bhalwal Division LJC Sargodha	Fax,048-9230649	-
		048-9230406	
14	Executive Engineer Shahpur Division LJC Sargodha	048-9230447	-
		Fax, 048-9230836	
15	Executive Engineer, Rasul Division LJC., Rasul.	0546-553211	0340-7159459
16	Deputy Commissioner Sargodha	048-9230025	048-9230046
		Fax,048-9230026	
17	Executive Engineer Bhalwal Drainage Division Bhalwal	-	-
18	In –charge Vigilance Cell Irrigation & Power Department Punjab Lahore	042-9213157	-
19	Telegraph Office Sargodha (Flood Emergency Center Sargodha	048-9230453	-
20	Sub Divisional Officer Bhalwal Sub Division	048-9230410	-
21	Sub Divisional Officer Hujjan Sub Division	-	0340-1336544

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CHAPTER - 11

11. Standard operating procedure (SOP) for Breaching Sections

11.1. History of the breaching section:

No breaching section in Bhalwal Canal Division.

11.2. Location, Design, Quantity and Variety of the explosive required for detonation:

Does not relate.

11.3. Arrangement of the explosives and security of explosive store:

Does not relate.

11.4. List of the security staff along with detail of their training etc.:

Does not relate.

11.5. Detail of mechanical means as a stand arrangement in case of detonation failure:

Does not relate.

11.6. Duty Roster in case of critical situation:

Does not relate.

11.7. Breaching Committee with their action plan:

Does not relate.

11.8. List of the Villages likely to be inundated in case of breach:

Does not relate.

11.9. Announcement and detail of evacuation arrangements:

Does not relate.

11.10. Detail of Coordination with Civil / Army Authorities:

Does not relate.

11.11. Parallel Communication Arrangements:

Does not relate.

11.12. Index Plan:

Does not relate.

SUB DIVISIONAL OFFICER

Bhabra Canal Sub Division
At Hilalpur Rest House

EXECUTIVE ENGINEER

Bhalwal Canal Division, LJC
Bhalwal, At Sargodha

SUPERINTENDING ENGINEER

Lower Jhelum Canal Circle
Sargodha

CHIEF ENGINEER

Sargodha Irrigation Zone
Sargodha

PART -----B

CHAPTER - 12

12. Vulnerable sites of Flood Bund/ Structures

12.1. Apprehended Breach Sites in Flood Bunds/ Structures:

There is one following vulnerable site along flood bund in Bhalwal Canal Division LJC Sargodha.

Sr. No.	Location	No of Site
1	Between RD 45000-85000 near village Kot Miana Tehsil Kot Momin District Sargodha	01

12.2. Operation of Breaching Sections:

There is no breaching section in Bhalwal Canal Division

12.3. Breaches due to rising of Flood Water, deterioration of Flood Bunds etc.:

No such.

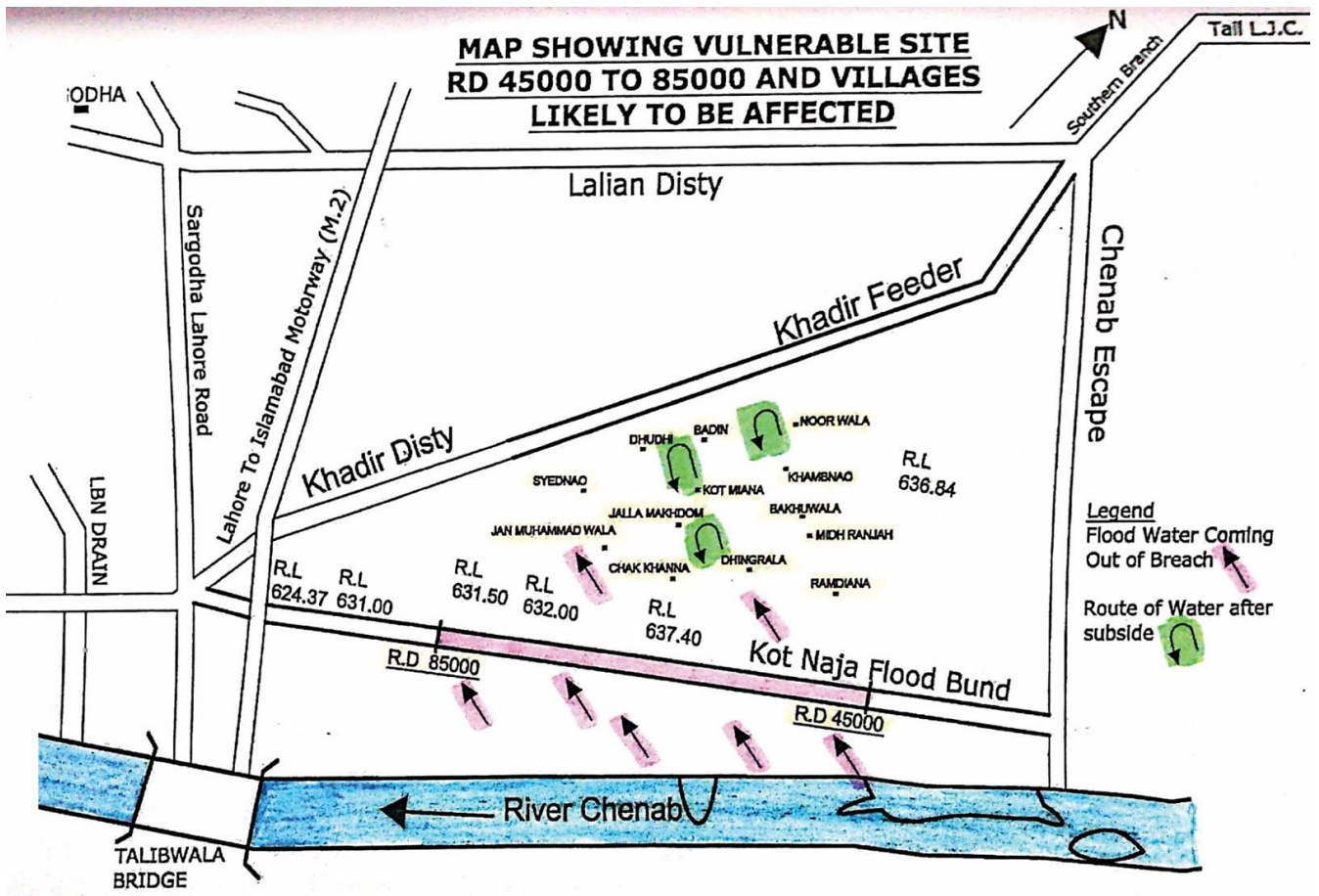
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CHAPTER - 13

13. Emergency Contingency Plan for vulnerable site (site) listed above. Emergency Contingency Plan must include: -

13.1. Plan Showing Route of Flood Water coming out the Breach Supported with levels:

A plan showing the route of expected flood water coming out of mishaps site between RD 45000-85000 Kot Naja Flood Bund near Village Kot Miana Tehsil Kotmomin District Sargodha. Attached page.



13.2. Detail of village, Abadie's likely to be affected and this should also be shown on the plan:

The following detail of 13 No villages of Tehsil Kot Momin District Sargodha which are likely to be inundated with different flood stages. As such the action for timely intimation, requisite evacuation, and safety/ relief measures are to be taken by Civil Authority, accordingly:-

Flood Limits					
Low	Medium	High	Very High	Exceptionally High	
	Guma	Guma	Gumba	Guma	Khamb Noe
	Sikdey	Sikdey	Sikdey	Sikdey	Khamb Kohna
	Thati Khurd	Thati Khurd	Thati Khurd	Thati Khurd	Kot Miana
	Thati Kallan	Thati Kallan	Thati Kallan	Thati Kallan	
		Mohriwal	Mohriwal	Mohriwal	
		Burj Ghulam Rasul	Burj Ghulam Rasul	Burj Ghulam Rasul	
			Takht Hazara	Takht Hazara	
			Nasir pur Khurd	Nasir pur Khurd	
			Bedar Ranja	Badar Ranja	
			Midh Ranjah	Midh Ranjah	
			Abbal	Abbal	
			Chak Suleman	Chak suleman	
			Ram Dina	Ram Dina	
			Syed Noe	Syed Noe	
			Hayat Pur	Hayat Pur	
			Burhkan Noon	Burhkan Noon	
				Hussain Abbad	
				Miana Hazara	
				Chak Badar	

13.3. Strategy and action taken be explained in detail. This may include:

Irrigation Department will make arrangement to make liaison with other agencies/ District Administrative, Army etc. in case of inundation by Flood water. Following to be done in case of emergency.

13.3.1. Arrangements:

Out spilled water will inundate the area on right side of bund as flood water will spread up in height up to 2 ft damaging crops and kacha houses. The out spilled water, after flood subsides, will again fall in the river Chenab in the same way.

The in-charge Sub Divisional Officer, Bhabra Canal Sub Division and Deputy Collector of Bhalwal Canal Division LJC Sargodha taking the cognizance of situation will make liaison with the Civil Administration and Police Department and also will arrange.

- i. Proclamation on loudspeakers etc., for evacuation of Abadie's inside the route of flood water.
- ii. Prepare maps for the area inundated and carry out immediate survey for damages to crops and other properties.
- iii. Flood hut has been proposed to be established at RD 85000 Kot Naja Flood Bund to monitor the emergent flood situation. If any obstruction is found in the way of flood water, it will be removed by deploying establishment and machines such like tractors, excavator machine and bulldozers as per situation prevailing at site. Efforts would be made that flood water may not stand in crops as well as Abadie's, to

minimize the losses / damages and ultimately will fall again the same way in river Chenab from the shortest possible time.

iv. Keep a close liaison with Civil Administration, Public Representatives, Army Authorities and the Executive Engineer Sargodha Division. List of phone numbers of above authorities have been mentioned in this flood fighting plan (Chapter 10)

13.3.2. Establishment of Flood Fighting Camps:

Bund/ Spur	Location of Camps
Kot Naja Flood Bund	RD: 31+800
	RD: 85+000
9 No. Solid stone studs	At Muradwala & Sikdey

13.3.3. Duties of Officers/ Officials and their camp sites:

Camp No.	Location	Officer's (Name + Designation+ Mobile No.)	Officials (Name + Designation + Mobile No.)
1	Kot Naja Flood Bund RD 31800	Irfan Maqbool Executive Engineer 048-9230406 03006363739	Muhammad Salman Sub Engineer Hilalpur 0331-5282352
2	Kot Naja Flood Bund RD 85000		Umar Farooq Sub Engineer Bakhwala 0347-6304535
3	At Muradwala & Sikdey	Hamza Qasim Sub Divisional Officer 0324-9724030	Hafiz M. Mujahid Sub Engineer (Attachment) Bakhwala 0347-8966638

13.3.4. Departmental Machinery:

No departmental machinery available in Bhalwal Canal Division.

13.3.5. Machinery from Private Source:

If needed it will be arranged / hired from private source. Following machinery can be hired in case of emergency.

- i. Excavator.
- ii. Tractor Trolley.
- iii. Front Blade Tractor.

13.3.6. Flood Fighting Material Required:

Sr. No.:	Name Of Item	Unit	Total Quantity Required (3 No Watching Hut)	Available Quantity For 2 No. Watching Huts	Balance Quantity Required For 3 No. Watching Huts	Status Of Arranging/ Purchasing Balance Quantity
1	Axes	No	15	11	4	1- Kot Naja Flood Bund RD 31800
2	Bamboos 8' to 10' (for watching arrangements)	No	60	5	55	
3	Baskets (Medium)	No	60	15	45	
4	Buckets Plastic (Medium)	No	15	0	15	
5	Torches (Medium) Rechargeable	No	9	9	0	
6	Chouldaries	No	3	1	2	2- Kot Naja Flood Bund RD 85000
7	E.G. Bags (50kg)	No	3000	25	2975	
8	Energy Severs (LED Bulb)	No	75	9	66	
9	Chairs (Plastic)	No	18	16	2	
10	Folding Table (Plastic)	No	3	3	0	3- At Muradwala & Sikdey
11	Funnels	No	6	0	6	
12	G.I Buckets	No	15	0	15	
13	Generator	No	3	1	2	
14	Hand Saws	No	6	5	1	
15	Handle for Kasi/Axes	No	30	5	25	Subject to availability of funds, the materials shall be purchased before start of flood season 2024
16	Holder for Lamp	No	90	0	90	
17	Kassi with Handles	No	15	8	7	
18	Kerosene Oil	Liter	90	0	90	
19	Killas (1.5' length)	No	300	0	300	
20	Life Jacket	No	15	17	-2	
21	M.Oil	Liter	12	0	12	
22	Manila Rope	P-Kg	6	0	6	
23	Match Boxes	No	30	0	30	
24	Munj/Patha/Trungers	No	300	0	300	
25	Needles (Big Size)	No	6	0	6	
26	Oil Extractors	No	3	0	3	
27	Petrol	Liter	150	0	150	
28	Rain Coats	No	15	6	9	
29	Steel Charpoy	No	9	6	3	
30	Sutli	P-Kg	30	0	30	
31	Switch/Plugs	No	36	0	36	
32	Umbrella (3' Dia)	No	15	13	2	
33	Wires 3/29	Meter	300	180	120	
34	Wooden Boards 10'x12' (Electric)	No	6	0	6	
35	Wooden Hammers	No	6	0	6	
36	Banner (Flood Watching Camp)	No	6	6	0	
37	Presentation Board	No	3	1	2	
38	Pedestal Fan	No	3	0	3	
39	Plastic Can (Capacity = 4 Liter)	No	15	2	13	
40	Duty Jackets	No	30	16	14	

13.3.7. Flood Fighting Material Available:

Detail of flood fighting material available is given as 13.3.6.

13.4. Detail of Other infrastructure like electric, Sui Gas, Telephone Installation, Road network, other buildings, canals and drainage network:

No such installation like Sui Gas, Telephone etc. exist in the route of flood water from breach site.

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CHAPTER - 14

14. Action Plan

14.1 Re-shuffling/ recouping plan of reserve stone departmentally:

Reshuffling of stone is not required. Recouping of reserved stone will be done tender before start of flood season 2024.

14.2 Detail of inlet/outlet crossing along with closing methodology:

Following are the water course crossings on Kot Naja Flood Bund in Bhalwal Canal Division.

Sr. No.	RD Water Course Crossing	Closing Methodology
1	RD 8975	Water Course Crossing will be plugged through earth filled gunny bags when required.
2	RD 24765	
3	RD 26185	
4	RD 27450	
5	RD 28500	
6	RD 29145	
7	RD 31500	
8	RD 32875	
9	RD 38000	
10	RD 38875	
11	RD 42400	
12	RD 46300	
13	RD 63700	
14	RD 64300	
15	RD 71600	
16	RD 74600	
17	RD 79200	

14.3 Deployment of Machinery (Medium to High Flood) River Chenab:

Sr. No.	Name of Structure	Length (Miles)	Vulnerable Reach	Camp Locations	Site In charge by Name & No.	Machinery Deployed				Labor Beldar+Mate	Availability of Stone (Lac Cft)
						Excavator	Dozer	Trolley / Dumpers	Tractor With Front Blade		
1	2	3	4	5	6	7	8	9	10	11	12
FLOOD BUND ALONG RIVER CHENAB IN BHALWAL CANAL DIVISION LJC SARGODHA											
1	Kot Naja Flood Bund RD 0-91440	18.288	RD 45000-85000	RD 85+000	Umar Farooq Sub Engineer Bakhuwala 0347-6304535	1	-	2	1	62 + 12 = 74 2 shifts / day	Not Required
2	9 No Solid Studs	9 No studs	9 No studs	At Muradwala & Sikdey	Hafiz M. Mujahid Sub Engineer (Attachment) Bakhuwala 0347-8966638	-	-	-	-	4 + 0 = 4 2 shifts / day	-
Total						1	-	2	1	78	-

Payment for machinery & work charge employees subject to verification by TPM/Consultant.

14.4 Deployment of Machinery (High to Very High Flood) River Chenab

Sr. No.	Name of Structure	Length (Miles)	Vulnerable Reach	Camp Locations	Site In charge by Name & No.	Machinery Deployed				Labor Beldar+Mate	Availability of Stone (Lac Cft)
						Excavator	Dozer	Trolley / Dumpers	Tractor With Front Blade		
1	2	3	4	5	6	7	8	9	10	11	12
FLOOD BUND ALONG RIVER CHENAB IN BHALWAL CANAL DIVISION LJC SARGODHA											
1	Kot Naja Flood Bund RD 0-91440	18.288	RD 45000-85000	RD 31800	Muhammad Salman Sub Engineer Hilalpur 0331-5282352	1	-	2	1	140 + 27 = 167 3 shifts / day	Not Required
2				RD 85+000	Umar Farooq Sub Engineer Bakhuwala 0347-6304535	1	-	2	1		
3	9 No Solid Studs	9 No studs	9 No studs	At Muradwala & Sikdey	Hafiz M. Mujahid Sub Engineer (Attachment) Bakhuwala 0347-8966638	1	-	2	1	9 + 0 = 9 3 shifts / day	-
Total						3	-	6	3	176	-

Payment for machinery & work charge employees subject to verification by TPM/Consultant.

14.5 Deployment of Machinery (High to Exceptionally High Flood) River Chenab

Sr. No.	Name of Structure	Length (Miles)	Vulnerable Reach	Camp Locations	Site In charge by Name & No.	Machinery Deployed				Labor Beldar+Mate	Availability of Stone (Lac Cft)
						Excavator	Dozer	Trolley / Dumpers	Tractor With Front Blade		
1	2	3	4	5	6	7	8	9	10	11	12
FLOOD BUND ALONG RIVER CHENAB IN BHALWAL CANAL DIVISION LJC SARGODHA											
1	Kot Naja Flood Bund RD 0-91440	18.288	RD 45000-85000	RD 31800	Muhammad Salman Sub Engineer Hilalpur 0331-5282352	2	-	6	2	277 + 56 = 313 3 shifts / day	Not Required
2				RD 85+000	Umar Farooq Sub Engineer Bakhuwala 0347-6304535	2	-	6	2		
3	9 No Solid Studs	9 No studs	9 No studs	At Muradwala & Sikdey	Hafiz M. Mujahid Sub Engineer (Attachment) Bakhuwala 0347-8966638	1	-	3	1	18 + 0 = 18 3 shifts / day	-
Total						5	-	15	5	351	-

Payment for machinery & work charge employees subject to verification by TPM/Consultant.

14.6 Police Deployment Plan

Sr. No.	Vulnerable for Illegal cuts during floods	Concerned Canal Division	Concerned Police Station & District	Police personnel to be deployed		Remarks (if any)
				Inspector / SI/ ASI	Constables	
1	Kot Naja Flood Bund at RD 45000-85000	Bhalwal	Midh District Sargodha	SI=1 ASI=1	3	-

14.7 Detail of Synthetic bags with Capacity of (50 Kg) and (100 Kg)

Sr. No.	Name of Structure	Length (Miles)	Vulnerable Reach	Camp Locations	Site In charge by Name & No.	No. of Synthetic Bags				Remarks
						50 Kg	100 Kg	50 Kg	100 Kg	
FLOOD BUNDS ALONG RIVER CHENAB IN BHALWAL CANAL DIVISION LJC SARGODHA										
1	Kot Naja Flood Bund RD 0-91440	18.288	RD 45000- 85000	RD: 31800	Muhammad Salman Sub Engineer Hilalpur 0331-5282352	Required	Available	Required	Available	Not available at stock and will be procured in emergency
2				RD: 85000	Umar Farooq Sub Engineer Bakhuwala 0347-6304535	200	Nil	100	Nil	

14.8 Detail of polythene sheets of black colure to protect upstream slope against wave action and to control embankments.

Sr. No.	Name of Structure	Length (Miles)	Vulnerable Reach	Camp Locations	Site In charge by Name & No.	Plastic Sheets (sft)		Remarks
FLOOD BUNDS ALONG RIVER CHENAB IN BHALWAL CANAL DIVISION LJC SARGODHA								
1	Kot Naja Flood Bund RD 0-91440	18.288	RD 45000- 85000	RD: 31800	Muhammad Salman Sub Engineer Hilalpur 0331-5282352	Required	Available	Not available at stock and will be procured in emergency
2				RD: 85000	Umar Farooq Sub Engineer Bakhuwala 0347-6304535	3000	Nil	

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CHAPTER - 15

15. Back up Divisions (in case of breach)

In case of breach or during emergency, (Shahpur Canal Division LJC, Sargodha) and his filed staff will act as sister Division.

Sub Divisional Officer,
Bhabra Canal Sub Division
At Hilalpur Rest House.

Executive Engineer,
Bhalwal Canal Division
Bhalwal.

Superintending Engineer,
Lower Jhelum Canal Circle,
Sargodha.

Chief Engineer,
Irrigation Sargodha Zone,
Sargodha.

PLAN SHOWING SOLID STONE STUDS AT MURADWALA & SIKDEY ON RIGHT BANK OF CHENAB RIVER

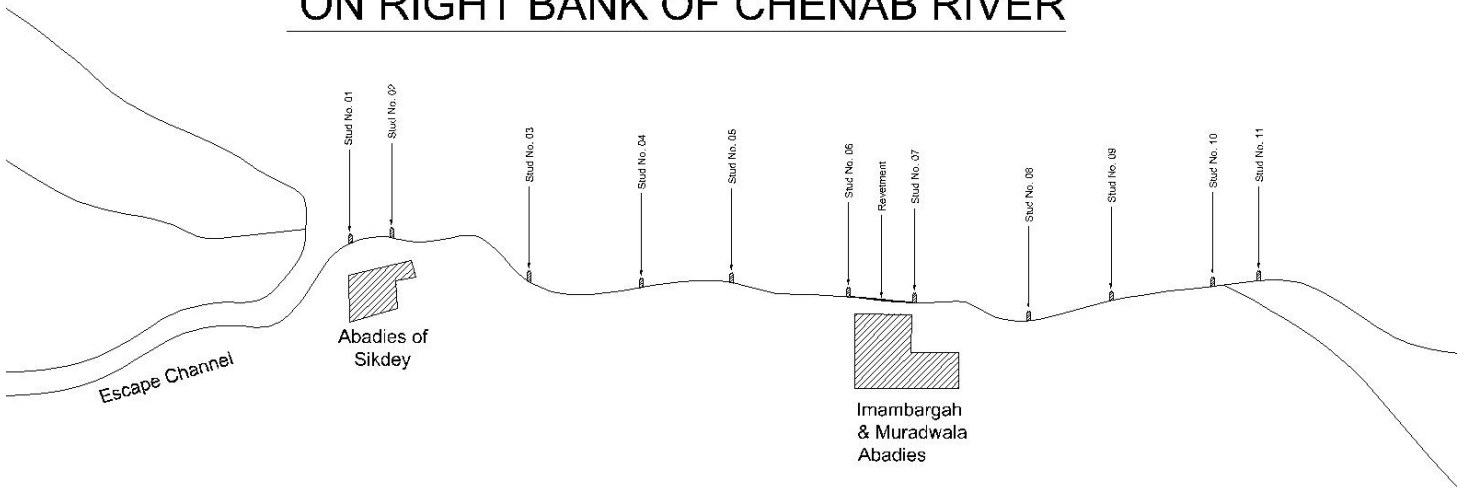
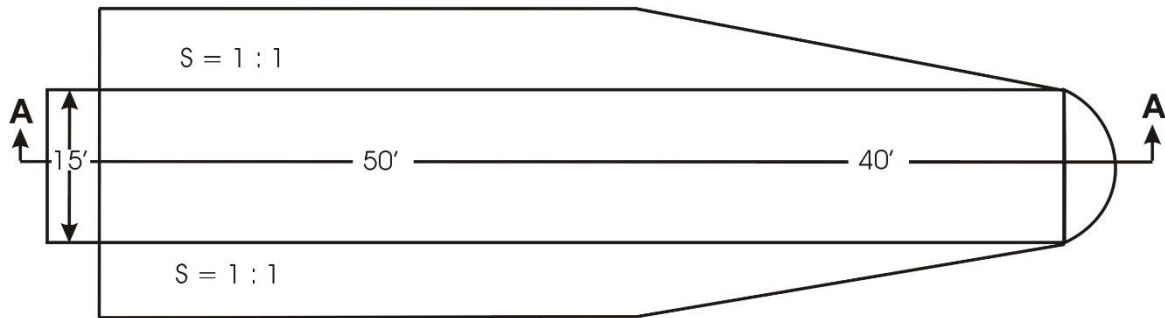


Figure 1 2D Plan of Sikdey Muradwala Studs



Section AA

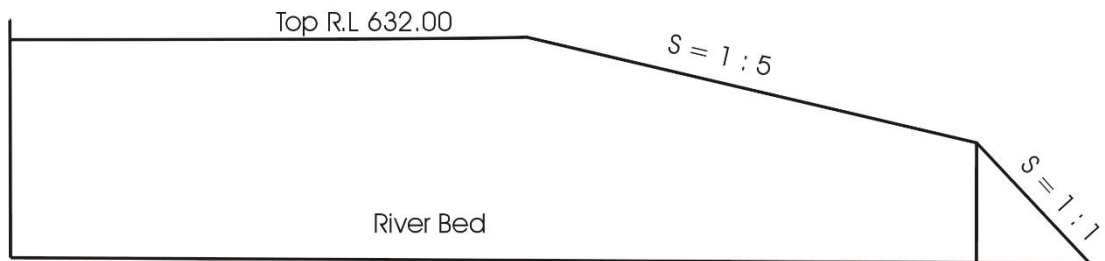


Figure 2 Cross-Sections of Studs 1 & 2 at Sikdey Muradwala

RD of w/c - xing	Proposed Data			Existing Data		Last Designed Data						
	Top Width	Side Slope	Top Levels with 6' FB above HFL	Top Width (ft)	Top levels	Side Slope	Top Width (ft)	Height of Bank	Top rL of Bank	RL of High floors 1973	Natural Surface Levels	RD
	20' (0-85250)	2:1 (Country Side) & 3:1 (River Side)	54.20	15	651.20		15.0'	3.0'	651.20	648.20	649.40	0
			52.70		49.70	49.70			46.70	44.80	5000	
RD 8975			51.40		48.30	48.40			45.40	45.30	10000	
			49.90		46.90	46.90			43.90	42.60	15000	
			48.60		45.50	45.60			42.60	42.20	20000	
RD 24765			47.00		43.95	44.00			41.00	42.50	25000	
RD 26185 RD 27450 RD 28500 RD 29145			45.80		42.72	42.80			39.80	38.40	30000	
RD 31500 RD 32875			44.60		41.50	41.60			38.60	38.30	35000	
RD 38000 RD 38875			43.60		40.50	40.60			37.60	38.40	40000	
RD 42400			42.50		39.50	39.50			36.50	37.40	45000	
RD 46300			41.50		38.40	38.50			35.50	33.80	50000	
			40.90		37.70	37.90			34.90	36.40	55000	
			20.20		37.00	37.20			34.20	33.80	60000	
RD 63700 RD 64300			39.90		36.70	36.90			33.90	32.60	65000	
			39.60		36.50	36.60			33.60	31.70	70000	
RD 71600 RD 74600			38.30	35.00	35.30	32.30			32.00	75000		
			36.80	33.7	33.8	30.8			30.83	80000		
			35.50	32.5	31.56	28.56			27.02	85000		
			39							85250		
			43							85500		
	44					85750						
	26					86000						
	20' (86000-132500)	2:1 (Country Side) & 3:1 (River Side)	34.56	15	31.5			32.5	29.5	24.37	90000	
RD 95500 RD 97600 RD 99200			32.80		29.8	29.8	26.8	26.12	95000			
RD 101400			31.40		28.4	28.4	25.4	22.43	100000			
RD 105519 RD 106520 RD 107120			30.00	27	27	24	19.94	105000				
RD 111721 RD 112980 RD 114010			28.45	25.45	25.45	22.45	20.22	110000				
RD 117505			26.90	23.9	23.9	20.9	18.73	115000				
RD 120952			25.25	22.45	22.25	19.25	18.05	120000				
RD 124300			23.60	20.6	20.6	17.6	15.93	125000				
			21.69	18.68	18.69	15.69	13.85	130000				
			20.70	17.7	17.7	14.7	3.83	132500				

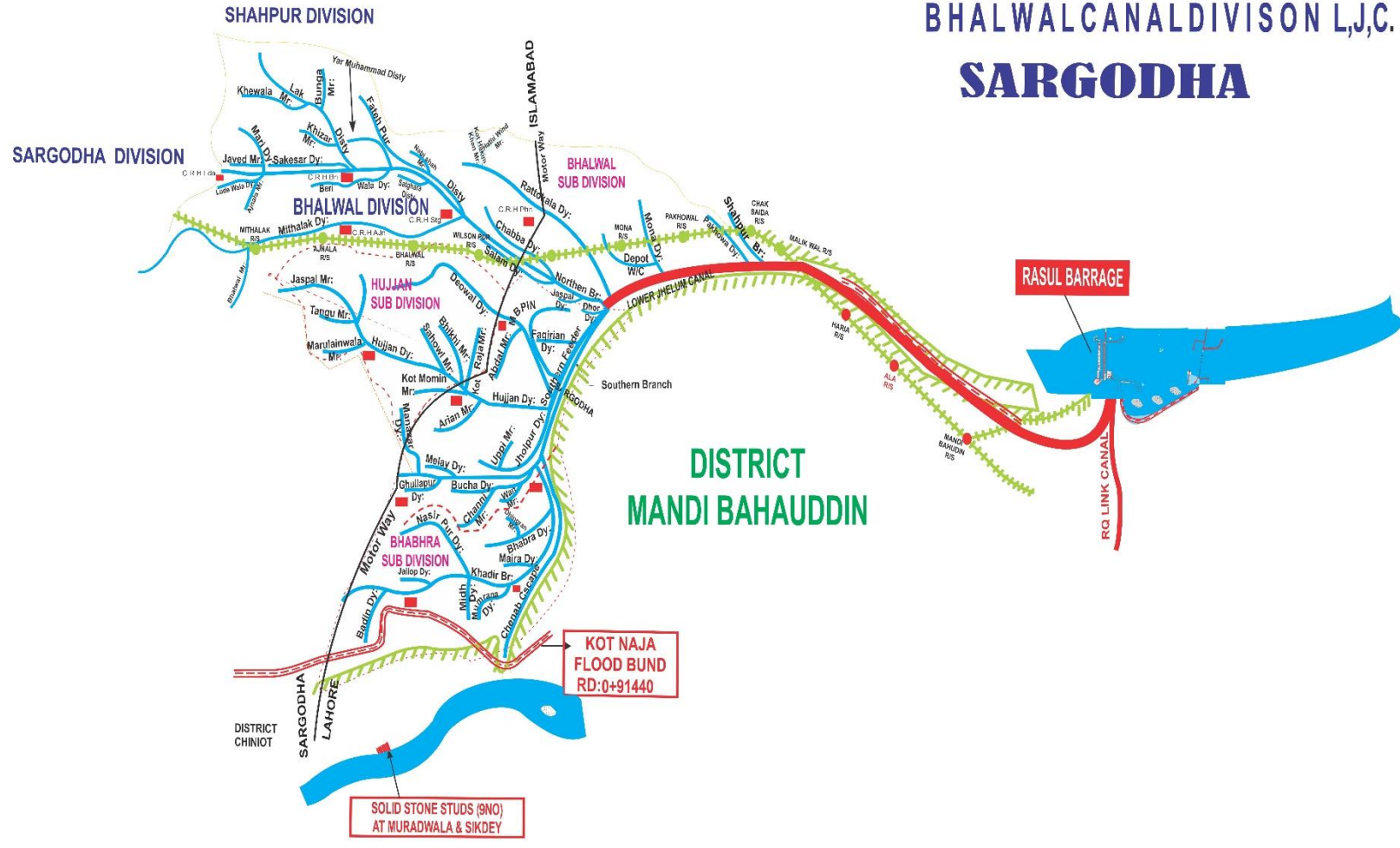
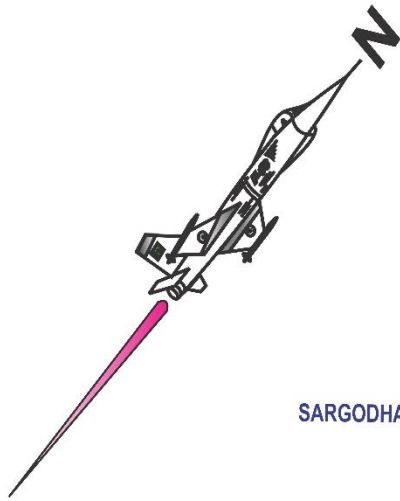
Table 3 L-Section of Kot Naja Flood Bund 0-Tail

XEN:/BHL



Figure 3 Kot Naja Flood Bund & River Training Works

INDEX PLAN OF BHALWAL CANAL DIVISION L,J,C. SARGODHA



DISTRICT HAFIZ ABAD