GOVERNMENT OF THE PUNJAB



IRRIGATION DEPARTMENT

**FLOOD FIGHTING PLAN**

**OF**

**KOT ADU CANAL DIVISION**

**FOR THE YEAR 2021**

**D. G. KHAN IRRIGATION ZONE D.G. Khan**

**Muzaffargarh Canal Circle Kot Adu Canal Division,**

**Multan. Kot Adu.**

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PART

A

CHAPTER

01

**CHAPTER– 1**

**SALIENT FEATURES**

* 1. **LOCATION**

The jurisdiction of Kot Adu Canal Division Kot Adu starts from End of left marginal bund on upstream Taunsa Barrage at Dholewala Head Regulator in district Layyah and extends till Muzaffargarh Canal RD. 206+700.

1.2 **GENERAL DESCRIPTION**

Kot Adu Canal Division provides Irrigation facilities to 425000 acres of valuable agricultural land. An area of about 50000 acres is irrigated through inundation canal system off-taking from Dholewala Regulator. The detail of flood embankments and River Training works is as under: -

**Structures** **Length (miles)**

**Indus**

1. Flood embankments 53.78  
 2. J-Head Spurs (4 Nos) 07.00

**Total: - 60.78**

These flood works protect 13 lac inhabitants of Muzaffargarh District. Due to installation of Thermal Power Plants, Sugar Mills, PARCO and Textile units, this district has been transformed into Industrial area and its importance / sensitiveness is increasing day by day on the national scenario.

1.3 **ADMINISTRATIVE SETUP**

The administration setup of Irrigation department is explained below which extends from District Layyah and goes further in Muzaffargarh District.: -

* 1. Chief Engineer D. G. Khan.
  2. Superintending Engineer, M.Garh Canal Circle, Multan
  3. Executive Engineer, Kot Adu Canal Division, Kot Adu.
  4. Sub Divisional Officer, Kot Adu Canal Sub Division.
  5. Sub Divisional Officer, Ahmad PurCanal Sub Division.
  6. Sub Divisional Officer, Basira Canal Sub Division.

Executive Engineer,

Kot Adu Canal Division, Kot Adu.

Sub Divisional Officer,

Kot Adu Canal Sub Division, Kot Adu

Sub Divisional Officer, Basira Canal Sub Division, Basira

Sub Divisional Officer,

Ahmad Pur Canal Sub Division, Ahmad Pur

1. Sub Engineer Basira Section

2. Sub Engineer Machi Section

3. Sub Engineer Rao Bala Section

1.Sub Engineer Kot Adu Section

2. Sub Engineer Kot Sultan Section

3. Sub Engineer Sanawan Section

1. Sub Engineer Mehmood Section

2. Sub Engineer Talai Section

3. Sub Engineer Sultan Section

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1

CHAPTER

02

**CHAPTER – 2**

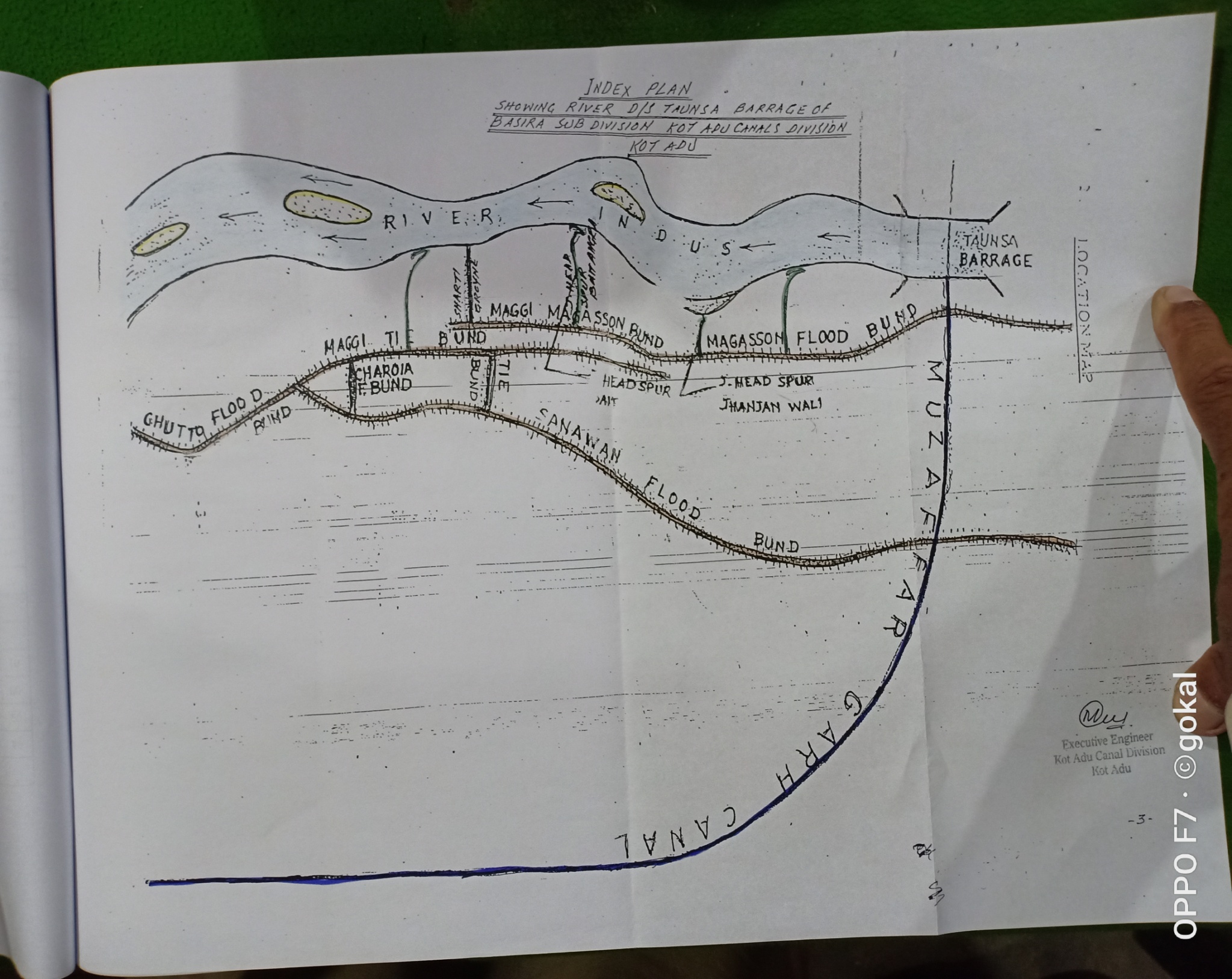
**FLOOD PROTECTION AND RIVER TRAINING WORKS.**

2.1 **DESIGN PARAMETER OF TRAINING WORKS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Name of works** | **Length in Miles.** | **Designed free board (Feet)** | **Designed top width (Feet)** | **Designed side slope** | |
| **01** | **02** | **03** | **04** | **05** | **06** | **07** |
|  | **FLOOD EMBANKMENT** |  |  |  |  |  |
|  | 1. **ACTIVE EMBANKMENTS.** |  |  |  |  |  |
| 01 | Magasson flood bund RD. 0-42358. | 08.47 | 5 | 30 | 1:3 | 1:2 |
| 02 | Maggi Magasson bund RD. 0-25200. | 05.04 | 5 | 30 | 1:3 | 1:2 |
| 03 | DholewalaGroyne RD. 0-22500. | 04.50 | 5 | 30 | 1:3 | 1:2 |
|  | 1. **ABANDONED/INACTIVE EMBANKMENTS.** |  |  |  |  |  |
| 01 | Sharti Groyne RD. 0-5500. Damaged during flood 2010. | 01.10 | 5 | 30 | 1:3 | 1:2 |
| 02 | Maggi Tie bund RD. 0-61000. | 12.20 | 5 | 30 | 1:3 | 1:2 |
| 03 | Sanawan flood bund RD. 0-105000. | 21.00 | 5 | 30 | 1:3 | 1:2 |
| 04 | Machi Tie bund RD. 0-2800. | 00.56 | 5 | 30 | 1:3 | 1:2 |
| 05 | Chorohyawala Tie bund RD. 0-5065. | 01.01 | 5 | 30 | 1:3 | 1:2 |
|  | **TOTAL** | **53.78** |  |  |  |  |
|  | **J-HEAD SPUR** |  |  |  |  |  |
| 01 | J-Head Spur Jhunjanwali. | 0.357 | 5 | 30 | 1:3 | 1:2 |
| 02 | J-Head Spur Bait Angra. | 0.357 | 5 | 30 | 1:3 | 1:2 |
| 03 | J-Head Spur PirharGharbi. | 1.60 | 7 | 30 | 1:3 | 1:2 |
| 04 | J-Head Spur KharGharbi. | 2.40 | 7 | 30 | 1:3 | 1:2 |
|  | **TOTAL** | **07.00** |  |  |  |  |

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3

CHAPTER

03

**CHAPTER– 3**

**BRIEF HISTORY OF PAST FLOOD EVENTS**

Inundation Canal System Namely Upper Hazara and Upper Kot Sultan Canals off-take from left bank of river Indus on up stream of Taunsa Barrage at Dhole Wala Regulator. It is about a century old canal. Originally it’s A.F.S discharge was 788 Cs and it used to command an area of 190689/161859 G.C.A / C.C.A acres. With the construction of Taunsa Barrage most of its area was switched over to the weir controlled supply and only 43487/41599 G.C.A / C.C.A acres is left over on this system which requires a discharge of 396 Cs only.

Lala Creek departing from the main river Indus from its left arm near Darya Khan acts as a supply Channel from the inundation system. Supplies brought in by this feeder are ponded up by a cross groyne via Dhole Wala Groyne and is regulated by Dhole Wala Regulator.

During super flood 2010, due to the breach of Left Marginal Bund (LMB) of Taunsa Barrage, the flood water of River Indus inundated approximately all the channels of Muzaffargarh Canal System. Due to abnormally high discharge in the channels, super critical velocity was generated. The main canal, distys, and minors breached at numerous points. At different points, due to over flow of the channels and super critical velocity, erosion and sloughing of the banks collapsed the canal system. The Main canal and Magasson Branch have become berm less. Besides the disaster due to flood 2010, the torrential rainfalls in Muzaffargarh Canal System badly affected the banks of the channels creating deep rain cuts shattering the banks especially in Thal area. In Thal area, the soil strata is sandy. The nature of damages is given below: -

* Approximately 600 No. breaches in Main Canal, Distys, and Minors.
* Muzaffargarh Canal breached at 9 No. different points.
* Due to serious erosion and sloughing of the banks, the channels became bermless and collapsed.
* Because of torrential rainfalls in Muzaffargarh Canal System, deep rain cuts have been developed on the banks along the channels especially in Thal area.
* Some critical stone pitched reaches have been damaged along Muzaffargarh Canal.
* Due to passage of exceptionally high discharge and super critical velocity, 04 No. structures washed away.

It is pertinent to mention that 30 No. channels have been restored by the machinery divisions in which: -

1. Approximately 500 No breaches were filled.
2. The scour pit depth of main breaches was 20-50 feet deep.
3. The breach length varied from 50 feet to 500 feet.

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Day and night efforts were made to achieve the goal for timely completion of these important restoration works and opening the channels. The channels were timely put into operation resulting in the following achievements.

1. All the system was put into operation in time on 15th of April 2010.
2. Muzaffargarh canal is running with a discharge of 8300 Cs which is the record achievement
3. All the tails in this Division are receiving AFS discharge which is also a record achievement.
4. A green revolutionary change in agriculture in M. Garh Canal command.
5. Public satisfaction regarding availability of water.
6. Not a single abnormal breach on the channels which is due to day & night strict watching, side protections and other precautionary measures.

**BRIEF HISTORY OF PAST FLOOD EVENTS 2013**

Maximum flood passing Taunsa Barrage during 2013 was recorded as 516017 Cs: resultantly no significant damage was observed during flood season. No major change of river trend was observed during flood 2013. The spell of flood discharges below Taunsa Barrage was recorded as under: -

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2013 | 321796 |
| 02 | August 2013 | 516017 |
| 03 | September 2013 | 218851 |
| 04 | October 2013 | 78284 |

**BRIEF HISTORY OF PAST FLOOD EVENTS 2014**

Maximum flood Passed in river Indus was recorded 257672 Cs. No significant damages were observed during flood season. No major change of river trend was observed during flood 2014. The spill of flood discharge in River Indus was recorded as under.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2014 | 245473 |
| 02 | August 2014 | 257672 |
| 03 | September 2014 | 167367 |
| 04 | October 2014 | 123413 |

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**BRIEF HISTORY OF PAST FLOOD EVENTS 2015**

Maximum flood Passed in river Indus was recorded on 03.08.2015 which was 618626 Cs. The damages which occurred in the jurisdiction of Kot Adu Canal Division included collapse of spill weir RD. 3+500 of Dhole Wala Groyne which collapsed on 08.08.2015. This spill weir was constructed during 1943 for spilling out surplus water of Lala Creek U/S Head Regulator Dhole Wala. The damage report was sent to High-ups. The Spell of Flood Discharge in river Indus was recorded as under.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2015 | 531596 |
| 02 | August 2015 | 618626 |
| 03 | September 2015 | 186943 |
| 04 | October 2015 | 86037 |

**BRIEF HISTORY OF PAST FLOOD EVENTS 2016**

Maximum flood Passed in river Indus was recorded 270721 Cs. No significant damages were observed during flood season. No major change of river trend was observed during flood 2016. The spill of flood discharge in River Indus was recorded as under.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2016 | 230820 |
| 02 | August 2016 | 270721 |
| 03 | September 2016 | 145868 |
| 04 | October 2016 | 107550 |

**BRIEF HISTORY OF PAST FLOOD EVENTS 2017.**

During 2017, the new J-Head Spurs Pirhar Gharbi and Khar Gharbi were constructed to check the left ward trend of river opposite RD. 3500 and RD. 30000 of M.M Link. Anew creek d/s J-Head Spur RD. 34+000 Magasson Branch was developed and hit the shark and J. portion of newly constructed J-Head Spur Pirhar Gharbi.

Now the newly constructed J-Head Spur Pirhar Gharbi and Khar Gharbi are under direct hit of the new creek, which must be taken under serious vigilance during coming flood season. The discharge in River Indus was recorded as under: -

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2017 | 253549 |
| 02 | August 2017 | 418388 |
| 03 | September 2017 | 147587 |
| 04 | October 2017 | 73700 |

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**BRIEF HISTORY OF PAST FLOOD EVENTS 2018.**

Maximum flood Passed in river Indus was recorded 287173 Cs on 17 August 2018. No significant damages were observed during flood season. No major change of river trend was observed during flood 2018.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2018 | 212004 |
| 02 | August 2018 | 287173 |
| 03 | September 2018 | 171794 |
| 04 | October 2018 | 111682 |

**BRIEF HISTORY OF PAST FLOOD EVENTS 2019.**

Maximum flood Passed in river Indus was recorded 390394 Cs on 17 August 2019. No significant damages were observed during flood season. No major change of river trend was observed during flood 2019.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2019 | 282282 |
| 02 | August 2019 | 390394 |
| 03 | September 2019 | 176778 |
| 04 | October 2019 | 122716 |

**BRIEF HISTORY OF PAST FLOOD EVENTS 2020.**

Maximum flood Passed in river Indus was recorded 379046Cs on 06 September 2020. No significant damages were observed during flood season. No major change of river trend was observed during flood 2018.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Months** | **Discharge (Cusecs)** |
| 01 | July 2020 | 230597 |
| 02 | August 2020 | 269609 |
| 03 | September 2020 | 379046 |
| 04 | October 2020 | 107328 |

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CHAPTER

04

**CHAPTER – 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**

For Taunsa Barrage, the various flood stages of River Indus are as given below: -

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Discharge (Lac Cusecs)** | **Flood Stages** |
| 01 | Below 2.50 | Normal |
| 02 | Above 2.50 but below 3.75 | Low |
| 03 | Above 3.75 but below 5.00 | Medium |
| 04 | Above 5.00 but below 6.50 | High |
| 05 | Above 6.50 but below 8.00 | Very high |
| 06 | 8.00 or above | Exceptionally high |

4.2 **TIME LAG OF FLOODS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Name of Head Work.** | **Distance in KM** | **Time in Hours** |
| 01 | Attack to Kala Bagh. | 169 | 24 |
| 02 | Kala Bagh H/works to Chashma Barrage. | 58 | 12 |
| 03 | Chashma Barrage to Taunsa Barrage. | 237 | 60 |
| 04 | Taunsa Barrage to Guddu Barrage. | 270 | 84 |

4.3 **HIGHEST FLOOD**

Maximum discharge received at Taunsa Barrage on 02.08.2010was 1085601 Cusecs.

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4.4 **PEAK DISCHARGES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Date** | **Month** | **Discharge in Cusecs** | **Flood Limit** |
| 1958 | 21 | July | 760784 | V.H Flood |
| 1959 | 10 | July | 518000 | H. Flood |
| 1960 | 21 | July | 509309 | H. Flood |
| 1961 | 23 | July | 476374 | M. Flood |
| 1962 | 26 | July | 330613 | L. Flood |
| 1963 | 18 | July | 354813 | L. Flood |
| 1964 | 15 | July | 502340 | H. Flood |
| 1965 | 15 | August | 438257 | M. Flood |
| 1966 | 07 | July | 516113 | H. Flood |
| 1967 | 31 | July | 457053 | M. Flood |
| 1968 | 18 | July | 431179 | M. Flood |
| 1969 | 30 | July | 464705 | M. Flood |
| 1970 | 08 | July | 368304 | L. Flood |
| 1971 | 13 | August | 392892 | M. Flood |
| 1972 | 02 | July | 371212 | L. Flood |
| 1973 | 23 | July | 567623 | H. Flood |
| 1974 | 31 | August | 368941 | L. Flood |
| 1975 | 26 | August | 524495 | H. Flood |
| 1976 | 07 | August | 675233 | V.H Flood |
| 1977 | 21 | July | 443343 | M. Flood |
| 1978 | 14 | July | 508422 | H. Flood |
| 1979 | 08 | August | 388069 | H. Flood |
| 1980 | 13 | August | 425233 | M. Flood |
| 1981 | 17 | August | 392091 | M. Flood |
| 1982 | 20 | August | 375499 | M. Flood |
| 1983 | 10 | August | 502189 | H. Flood |
| 1984 | 20 | August | 509694 | H. Flood |
| 1985 | 04 | August | 306680 | L. Flood |
| 1986 | 10 | August | 505069 | H. Flood |
| 1987 | 26 | August | 313204 | L. Flood |
| 1988 | 21 | July | 560916 | H. Flood |
| 1989 | 05 | August | 558630 | H. Flood |
| 1990 | 02 | August | 502152 | H. Flood |
| 1991 | 18 | July | 422947 | M. Flood |
| 1992 | 14 | August | 654579 | H. Flood |
| 1993 | 28 | August | 381302 | M. Flood |
| 1994 | 19 | July | 574602 | H. Flood |
| 1995 | 30 | September | 611937 | H. Flood  9 |
| 1996 | 20 | July | 518208 | H. Flood |
| 1997 | 31 | July | 534199 | H. Flood |
| 1998 | 18 | July | 519881 | H. Flood |
| 1999 | 13 | August | 387720 | M. Flood |
| 2000 | 05 | August | 209405 | L. Flood |
| 2001 | 27 | July | 281873 | L. Flood |
| 2002 | 17 | August | 306150 | L. Flood |
| 2003 | 7 | August | 421177 | M. Flood |
| 2004 | 21 | July | 179157 | Normal |
| 2005 | 20 | August | 531177 | H. Flood |
| 2006 | 11 | August | 612269 | H. Flood |
| 2007 | 19 | August | 333220 | L. Flood |
| 2008 | 08 | August | 263177 | L. Flood |
| 2009 | 21 | August | 312769 | L. Flood |
| 2010 | 02 | August | 1085601 | V.H Flood |
| 2011 | 01 | September | 227689 | L. Flood |
| 2012 | 10 | September | 235389 | L. Flood |
| 2013 | 17 | August | 516017 | H. Flood |
| 2014 | 18 | August | 257672 | Normal |
| 2015 | 03 | August | 618626 | H.Flood |
| 2016 | 20 | July | 308601 | L.Flood |
| 2017 | 07 | August | 424388 | M. Flood |
| 2018 | 17 | August | 287173 | L. Flood |
| 2019 | 15 | August | 390394 | M.Flood |
| 2020 | 6 | September | 379046 | M.Flood |

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CHAPTER

05

**CHAPTER – 5**

**FLOOD FIGHTING STRATEGY**

1. Escapes at Dholewala Groyne at RD. 3500 & RD 3700 are opened when the upstream gauge at Dholewala exceeds 12 feet.
2. Relief cut in Dholewala Groyne at RD. 9900 is made when the upstream gauge at Dholewala exceeds level 14 feet. Once that stage is reached the District Administration of Layyah is informed about it so that a warning can be issue to the public which will be affected by increasing waters.

**FLOOD WARNING**.

1. When the gauge at upstream Dholewala Regulator exceeds 14.00 feet, then District Administration Layyah is intimated that a relief cut at RD. 9900 Dholewala Groyne is being made and the public being affected are also intimated and warned to be shifted from the area.

2. All the high ups of irrigation department are also informed about the situation.  
3. Executive Engineer, Kot Adu is overall in charge of these steps and safety measures.

**LATEST POSITION OF RESERVE STOCK OF STONE**

The reserve stock stone at both the J-Head spurs is not sufficient to meet with any emergency. There is a dire need of procurement of Reserve stock stone in this Division.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Description** | **Quantity as per sanction limit (in Lac Cft)** | **Quantity available at site (in Lac Cft)** | **Balance Quantity (in Lac Cft)** | **Remarks** |
| 01 | J-Head Spur Bait Angra. | 1.50 | 1.50 | - | 100% Available at site |
| 02 | J-Head Spur Jhunjanwali | 1.50 | 0.41 | 1.09 | 72% Required |
| 03 | J- Head Spur Pirhar Gharbi | 1.50 | 0.95 | 0.55 | 37% Required |
| 04 | J- Head Spur Khar Gharbi | 1.50 | 0.47 | 1.03 | 70% Required |

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11

CHAPTER

06

**CHAPTER – 6**

**FLOOD DAMAGED RESTORATION WORKS.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.#** | **Name of Work** | **Cost (Rs. In Million)** | **Remarks / Status** |
| 1 | Restoration of J-Head Spur Pirhar Gharbi. | 2.18 | Work completed. |

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CHAPTER

07

**CHAPTER – 7**

**FLOOD FIGHTING WATCHING ARRANGEMENT.**

7.1 **PRE-FLOOD ARRANGEMENT**

Following pre-flood arrangement will be made,

1. During the month of May-June, the watching establishment will work for making pre-flood arrangements till the river spills out.
2. For flood Bunds in second defense line, the same pre-flood arrangements will continue throughout the flood season unless any of these bunds comes under action.
3. Flood watching material will be arranged in sample quantities. Care will be taken to ensure that adequate quantity of the required material is distributed and placed at all the watching huts especially at all critical sites. All the articles and material should be in good condition.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Circle / Division** | **Name of Structure** | **Location RD. Where Stone is Lying** | **Sanctioned Reserve Stock Limit (in lac Cft)** | **Available quantity** | **Balance Qty of Stone required** | **Remarks** |
| Muzaffargarh/ Kot Adu | J-Head Spur Bait Angra | J-Head | 1.50 | 1.50 | Nil | The balance quantity will be procured before coming a Flood 2021. |
| Muzaffargarh/ Kot Adu | J-Head Spur Jhunjhanwali | J-Head | 1.50 | 0.41 | 1.09 |
| Muzaffargarh/ Kot Adu | J-Head Spur Pirhar Gharbi | J-Head | 1.50 | 0.95 | 0.55 |
| Muzaffargarh/ Kot Adu | J-Head Spur Khar Gharbi | J-Head | 1.50 | 0.47 | 1.03 |
| Total | | | 6.0 | 3.33 | 2.67 |

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7.2 **WATCHING ESTABLISHMENT**

The establishment for maintaining flood embankments will be employed on 01-06-2021 as 2 men per mile. Watching establishment will be employed keeping in view the depth of water above general N.S.L. as described below: -

1. For 1 to 2 ft depth of water along bunds, 2 men per mile per shift in three shift of 8 hours’ duration.
2. For 2 to 3 ft and above depth of water along bund, 3 men per mile per shift in three shifts of 8 hours’ duration.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Flood Limits** | | | | | | | | | | |
| **Site** | **Low** | | **Medium** | | **High** | | **Very High** | | **Exceptionary High** | |
| **Men** | **Shift** | **Men** | **Shift** | **Men** | **Shift** | **Men** | **Shift** | **Men** | **Shift** |
| Magasson flood bund RD. 0-42358. | 9 | 1 | 9 | 1 | 9 | 1 | 14 | 1 | 14 | 1 |
| Maggi Magasson bund RD. 0-25200. | 17 | 1 | 17 | 1 | 17 | 1 | 25 | 1 | 25 | 1 |
| Dholewala Groyne RD. 0-22500. | 10 | 1 | 10 | 1 | 10 | 1 | 15 | 1 | 15 | 1 |
| J-Head Spur Jhunjanwali. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| J-Head Spur Bait Angra. | 4 | 1 | 4 | 1 | 4 | 1 | 6 | 1 | 6 | 1 |
| J-Head Spur Pirhar Gharbi. | 3 | 1 | 3 | 1 | 3 | 1 | 5 | 1 | 5 | 1 |
| J-Head Spur Khar Gharbi. | 5 | 1 | 5 | 1 | 5 | 1 | 7 | 1 | 7 | 1 |

7.3 **ARRANGEMENT AT SENSITIVE SITES**

In case of any emergency, gang of 5 men per mile will be employed when the river rises beyond low flood mark and maintains till the end of the season. This strength will be sufficient for medium and high flood stages. In case of very high and exceptionally high floods, this scale may be increased wherever necessary by the executive Engineer, Kot Adu Canal Division in consultation with Superintending engineer, Muzaffargarh Canal Circle Multan.

In case where it is difficult to get labor at the time of high discharge, it will be arranged through the civil authorities or contractors. It is advisable to keep a group of tractors with blade or dozers and dumpers with excavators as a standby arrangement for use in emergency during high floods.

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**7.4 WATCHING MATERIAL**

Watching material will be arranged in ample quantity. Care will be taken to ensure that adequate quantity of the required material is distributed at all the centers and it will be ensured that it is available particularlyat dangerous sites. As a guide, the following scale will be normally sufficient. This can be enhanced by the Executive Engineer in consultation with Superintending Engineer, Muzaffargarh Canal Circle, Multan as per condition. The status of watching material in this Division as below,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No.** | **Items** | **Total Qty.** | **Available Qty.** | **Balance /**  **Required Qty.** |
| 01 | Axes | 100 No. | Nil | 100 No. |
| 02 | Bamboos 8’ to 10’ (for Lighting arrangements) | 20 No. | // | 20 No. |
| 03 | Baskets | 200 No. | // | 200 No. |
| 04 | Buckets | 50 No. | // | 50 No. |
| 05 | Cell for Torches | 150 No. | // | 150 No. |
| 06 | Chimneys for Lamps | 360 No. | // | 360 No. |
| 07 | Chouldaries | 07 No. | // | 07 No. |
| 08 | E.G. Bags | 500 No. | // | 500 No. |
| 09 | Energy Savers | 50 No. | // | 50 No. |
| 10 | Folding Chair | 42 No. | // | 42 No. |
| 11 | Folding table | 07 No. | // | 07 No. |
| 12 | Funnels | 10 No. | // | 10 No. |
| 13 | G.I.Buckets | 50 No. | // | 50 No. |
| 14 | Gas Mentles | 50 No. | // | 50 No. |
| 15 | Generator | 07 No. | // | 07 No. |
| 16 | Hand Saws | 200 No. | // | 200 No. |
| 17 | Handle for Kassi/Axes | 200 No. | // | 200 No. |
| 18 | Holder for Lamp | 200 No. | // | 200 No. |
| 19 | Kassi with Handles | 200 No. | // | 200 No. |
| 20 | Kerosene Oil | 4000 Ltr | // | 4000 Ltr |
| 21 | Killas | 500 No. | // | 500 No. |
| 22 | Lanterns | 180 No. | // | 180 No. |
| 23 | Life Belt | 07 No. | // | 07 No. |
| 24 | M. Oil | 100 Ltr | // | 100 Ltr |
| 25 | Manila Rope | 250 ft | // | 250 ft |
| 26 | Match Boxes | 50 No. | // | 50 No. |
| 27 | Munj /Patha /Trungers | 1000 No. | // | 1000 No. |
| 28 | Needles | 20 No. | // | 20 No. |
| 29 | Oil extractors | 10 No. | Nil | 10 No. |
| 30 | Patromax | 07 No | // | 07 No |
| 31 | Petrol | 1000 Ltr | // | 1000 Ltr |
| 32 | Rain coats | 180 No | // | 180 No |
| 33 | Steel charpay | 20 No | // | 20 No |
| 34 | Sutli | 05 Lbs | // | 05 Lbs |
| 35 | Swith / plugs | 25 No | // | 25 No |
| 36 | Torchers 03 cells | 25 No. | // | 25 No. |
| 37 | Umbrella | 25 No. | // | 25 No.  15 |
| 38 | Wicks | 2000 No. | // | 2000 No. |
| 39 | Wires 7/029 | 07 coils | // | 07 coils |
| 40 | Wooden boards 10x12 | 10 No. | // | 10 No. |
| 41 | Wooden hammer | 10 No. | // | 10 No. |

**The required quantity will be purchase before flood season 2021.**

* 1. **ARRANGEMENT FOR SOUNDING AND PROBING.**

For every spur sites, following arrangements will be made for probing.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Item** | **Period.** |
| 01 | 01. Large Boat with boatman | 01.06.2021 to 15.09.2021 |
| 02 | 01 Small boat with boatman | 01.06.2021 to 15.09.2021 |
| 03 | 02 helpers to boatman | 01.06.2021 to 15.09.2021 |
| 04 | 02 sounders per boat. | 01.06.2021 to 15.09.2021 |

* 1. **LIGHT ARRANGEMENT.**

Mobile Generators and sufficient stock of dry cell, torches, lanterns and patromax, etc will be kept available in the emergency stores as per detail given on 7.4 Sub Engineers, mechanical assistant and electrician will be responsible to keep these in working order.

* 1. **RATION ARRANGEMENTS.**

District Administrators Layyah and Muzaffargarh will be requested in case of worst situation to ensure supply of ration to the public shifted at the flood bunds.

* 1. **P.O.L ARRANGEMENTS FOR VEHICLE.**

Reserve stocks of P.O.L for vehicles shall will be kept at Machhi Rest House and Dholewala Head Regulator on the following scale.

1. Petrol 2500 Liters

2. Diesel 1500 Liters

3. K. Oil 1000 Liters

7.9 **TRANSPORTAION.**

This Division has 02 No. jeep, 02 No. double cabin pickups, During the emergency 02 No. jeep 2 No. pick ups can be made available from another Department. This arrangement will be sufficient. During emergency, D.C.O Muzaffargarh, T.M.O Kot Adu and Deputy Superintendent Police Kot Adu will be requested to arrange vehicles.

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* 1. **LAW AND ORDER**

Usually the Law and Order situation is normal. However, in case of any emergency to maintain Law and Order situation, concerned D.C.O and D.P.O will be requested for police help.

7.11 **MEDICAL ARRANGEMENT FOR LABOR**

There is no such facility, so the mobile dispensary is utmost necessary. Medicine required for protection /relief and against snack bites, accidents and break out of epidemic will be arranged and made available. This arrangement will be sufficient for our normal establishment but in case of emergency, the more labors and the mobile dispensary will be arranged through canal authorities and District Health Officer on the request of the Executive Engineer, Kot Adu Canal Division, Kot Adu.

7.12 **LIAISON WITH OTHER DEPARTMENT**

Executive Engineer, Kot Adu Canal Division, and Sub Divisional Officers, Kot Adu, and Basira Sub Division will be in close liaison with their counterpart in other departments. Higher authorities of other departments will be approached if needed through Superintending Engineer, M.Garh Canal circle, Multan and Chief Engineer, D.G.Khan Irrigation, Zone D.G. Khan. At site, Sub Engineers will conduct inspections with visiting officers of civil and army if no higher officer is available at the spot.

7.13 **ROLE OF THE ARMY.**

There is no doubt about the fact that during emergency, the armed forces produce better result in comparatively shorter period than the undisciplined masses of casual labor. It is therefore imperative to have at least 100 army jawans available when the discharge exceeds 07.50 Lac cusecs.

7.14 **DUTIES OF TELEPHONE ATTENDENT.**

Telephone is in the canal colony Kot Adu and as well as Taunsa Barrrage Colony and Taunsa Headworks. Telegraph office is telephonically connected with Taunsa Headworks. Telephone attendants will be appointed on both these situations to perform duties around the clock and keep the officers informed about the flood situations. This year, facility of trunk telephone is being made available in canal telegraph office, Kot Adu and Sub Divisional Offices Kot Adu and Basira.

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr No.** | **Name of Official** | **Perid** | **Time** | |
| **From** | **To** |
| **1** | Mr. Shabir Ahmed & Mukhtar Hussain | 15.06.2021 to 15.08.2021 | 9:00 AM | 4:00 PM |
| **2** | Mr.Haq Nawaz & Muhammad Iqbal | 15.06.2021 to 15.08.2021 | 5:00 PM | 12:00 PM |
| **3** | Muhammad Hanif & Muhammad Imran , Ali Hasnain | 15.06.2021 to 15.08.2021 | 1:00 PM | 8:00 PM |

* 1. **WIRELESS ARRANGMENTS.**

The department has arranged a long range 20 H.P wireless base set in telegraph office at Kot Adu and Kaloo regulator RD. 206700 Muzaffargarh Canal. Walki talkies will be fixed in the vehicles. The flood warning, flood gauges, discharges and other information regarding floods are received and transmitted by the base station to the flood emergency at D.G. Khan. The mobile units will help the touring officers to keep in constant touch with flood situations.

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CHAPTER

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**CHAPTER -8**

**DETAIL OF ENCROACHMENTS.**

There is no permanent encroachment of the embankment in this Division.

**STATUS OF ENCROACHMENT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr.#** | **Total Encroachment** | **Name of Encroachment** | **No of Encroachment Removed** | **Balance** | **Remarks** |
| 1 | * NIL- | | | | |

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CHAPTER

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**CHAPTER - 09**

**DUTY ROSTER/ FLOOD FIGHTING PROGRAME.**

1. Sub Engineer Kot Adu will shift his camp at Dholewala Groyne when gauge tends to rise above 12.0 ft.
2. Sub Engineer Kot Sultan will shift Dholewala Regulator when discharge exceeds 2.25 Lac and remain in touch with overall condition of bunds.
3. When the gauge goes above 4.0 sub Divisional Officer Ahmadpur Sub Division with one of his Sub Engineer will move Dholewala Groyne. Deputy Collector Kot Adu Canal Division along with 02 Zilladars and 5 Canal Patwari will be ready to shift to Groyne on receipt of flood warning.
4. When the gauge touches 14.0 ft, Executive Engineer Kot Adu Canal Division Kot Adu will inspect Groyne daily.
5. When the gauge is 14.6 ft or above, the Superintending Engineer Muzaffargarh Canal Circle Multan and Chief Engineer Irrigation Dera Ghzai Khan will be kept informed about the behavior of flood and action being taken.
6. When the gauge rises above 14.96ft, Civil Administration will be simultaneously informed about further development and relief cuts.
7. Sub Engineer Machi will shift his camp at J-Head Spur opposite Bait Angra while Sub Engineer Rao Bela will watch the J-Head Spur opposite village Jhunjanwali.

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CHAPTER

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**CHAPTER - 10**

**EMERGENCY TELEPHONE NUMBERS.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Name of officers** | **Telephone numbers** | |
| **Office** | **Residence** |
|  | 1. **LAHORE.** |  |  |
| 01 | Secretary Irrigation Department Lahore. | 042-99212117-18 |  |
| 02 | Chief Engineer, Drainage & Flood Zone. | 042-99230602 |  |
| 03 | Additional Secretary Technical. | 042-99212128 |  |
| 04 | Director hydrology. | 042-9230368 |  |
| 05 | Director floods. | 042-99231614 |  |
| 06 | Director Regulation. | 042-99212147 – 49 |  |
| 07 | Deputy Secretary Development. | 042-99212128 |  |
|  | **B- LOCAL & CIVIL AUTHORITIES.** |  |  |
| 01 | Chief Engineer, Irrigation D.G. Khan. | 064-9260245 | 064-9260246 |
| 02 | Superintending Engineer, M.Garh Canal Circle, Multan. | 061-9200090  Fax 061-9200088 |  |
| 03 | Executive Engineer, Kot Adu Canal Division, Kot Adu. | Fax 066-2242926 | 0321-6217522 |
| 04 | Executive Engineer Taunsa Barrage Division, Kot Adu. | 066-2242796  066-2240296 | 0300-4276753 |
| 05 | Sub Divisional Officer Head Works Taunsa Barrage Kot Adu. | 066-2242657 | 0301-4785555 |
| 06 | Telegraph office Kot Adu Canal Division. | 066-2243398 |  |
| 07 | Sub Divisional Officer Basira. |  | 0301-3335402 |
| 08 | District Coordination Officer M.Garh. | 066-9200251-52 |  |
| 09 | Deputy Commissioner Officer Layyah. | 060-6413703-4 |  |
| 10 | Assistant Commissioner Kot Adu. | 066-2242691 | 066-2242965 |
| 11 | Assistant Commissioner Layyah. | 060-2413718 | 060-2413719 |
| 12 | Zonal flood warning centre D.G. Khan. | 064-9260251 |  |
| 13 | District Police Officer M. Garh. | 066-9200311 |  |
| 14 | District food controller M.Garh. | 066-9200033 |  |
| 15 | Deputy Officer Roads M. Garh. | 066-2422459 |  |
| 16 | Deputy Superintendent Police Kot Adu. | 066-2243452 |  |
| 17 | Military Officer Headquarter Engineers 2-corps Multan cantt. | 061-53135179  061-53132364 |  |
| 18 | Sub Divisional Officer, Kot Adu. |  | 0313-6779282 |
| 19 | Sub Divisional Officer, Ahmad Pur Kot Adu. |  | 0333-7313410 |
| 20 | Tehsil Municipal Officer, Kot Adu. | 066-2243117 |  |

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CHAPTER

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**CHAPTER - 11**

**STANDARD OPERATING PROCEDURE (SOP) FOR BREACHING SECTIONS.**

There is No breaching section in this division.

|  |  |
| --- | --- |
| 11.1 | History of the breaching section. |
|  | - Nil - |
| 11.2 | Location, Design, Quality and variety of the explosive required for detonation. |
|  | - Nil - |
| 11.3 | Arrangement of explosives and security of explosive stores. |
|  | - Nil - |
| 11.4 | List of security staff along with detail of their training. |
|  | - Nil - |
| 11.5 | Detail of Mechanical means as a stand by arrangements in case of detonation failure. |
|  | - Nil - |
| 11.6 | Duty roster in case of critical situation. |
|  | - Nil - |
| 11.7 | Breaching committee with their action plan. |
|  | - Nil - |
| 11.8 | List of the villages likely to be inundated in case of breach. |
|  | - Nil - |
| 11.9 | Announcement and detail of evacuation arrangements. |
|  | - Nil - |
| 11.10 | Detail of coordination civil/army authorities. |
|  | - Nil - |
| 11.11 | Parallel communication arrangements. |
|  | - Nil - |

11.12 Index plan not relates.

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PART

B

CHAPTER

12

**CHAPTER - 12**

**VENERABLE SITES ON FLOOD BUND STRUCTURES.**

12.1 **APPREHENDED BREACHES IN FLOOD BUNDS /STRUCTURES.**

No vulnerable site / reach in this Division.

12.2 **OPERATION OF BREACHING SECTIONS**

Nil

12.3 **BREACHES DUE TO RISING OF FLOOD WATER, DETERIORATION OF BLOOD BUNDS ETC**

In Let AT RD 9-10 bridge Dholy Wala Groyne Marked On Page No 22

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CHAPTER

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**Chapter-13**

**EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITE (SITES)**

**LISTED ABOVE. EMERGENCY CONTINGENCY MUST INCLUDE.**

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

There is no breaching / **Vulnerable** site in this Division

13.2 **DETAIL OF VILLAGES ABADIES LIKELY TO BE AFFECTED AND THIS SHOULD ALSO BE SHOWN ON THE PLAN**

During the high flood the following villages likely will be affected

* 1. Chah Khokhar Wala
  2. Chah Lasharai Wala
  3. Basti Gishkori
  4. Khan Wala etc

13.3 **STRATEGY AND ACTION TAKEN BE EXPLAINED IN DETAIL. THIS MAY INCLUDE**

In case of high flood emergency, the breaching section strategy and action taken will be as under. In case of great emergency, scattered abadies will be evacuated before time. When flood water touches Dholewala Groynwe and will rise up to level 465.0, this groyne will be breached between RD. 9+000-10+000, as all houses of nearby abadies U/S and D/S of Dholewala Groyne will be damaged if breaching action not activated at this place. For any complexity District Administration Layyah and Irrigation authorities will visit jointly for need full action.

13.3.1 ARRANGEMENTS.

The flood fighting camp will be established at RD.9-10 bridge Dhole Wala Groyne with flood fighting material along labour for the emergency.

13.3.2ESTABLISHMENT OF FLOOD FIGHTING CAMPS.

The flood fighting camp will be established at RD.9-10 Dhole Wala Groyne with flood fighting material along labour for the emergency.

13.3.3DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMP SITES.

The Sub Divisional Officer Kot Addu Canal Sub Division will camp at Head Regulator Dhole Wala and Sub Engineer Kot Sultan shell also remain at his duty.

13.3.4DEPARTMENTAL MACHINERY AVAILABLE.

There is no departmental machinery.

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13.3.5MACHINERY AVAILABLE FROM PRIVATE SOURCE.

In case of emergency machinery will be hired through Govt. Contractor.

13.3.6FLOOD FIGHTING MATERIAL AVAILABLE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr.No.** | **Material** | **Required** | **Available** | **Balance available** |
| 1 | Axes | 50 Nos. | 25 Nos. | 25 Nos. |
| 2 | Bamboos 8’ -10’ | 400 Nos. | 200 Nos. | 200 Nos. |
| 3 | Chouldaries | 8 Nos. | 4 Nos. | 4 Nos. |
| 4 | E.G.Bags | 200 Nos. | 100 Nos. | 100 Nos. |
| 5 | Generator | 4 Nos. | 2 Nos. | 2 Nos. |
| 6 | Kassi with Handle | 100 Nos. | 50 Nos. | 50 Nos. |
| 7 | Lantern | 100 Nos. | 50 Nos. | 50 Nos. |
| 8 | Torches | 100 Nos. | 50 Nos. | 50 Nos. |
| 9 | Gunny Bags | 400 Nos | 200 Nos | 200 Nos |
| 10 | Kerosene Oil | 1000 Ltr. | 500 Ltr. | 500 Ltr. |
| 11 | Diesel /Petrol | 800 Ltr. | 400 Ltr. | 400 Ltr. |
| 12 | Folding Chair | 8 Nos. | 4 Nos. | 4 Nos. |
| 13 | Folding Chairs | 8 Nos. | 4 Nos. | 4 Nos. |

13.3.7 : FLOOD FIGHTING MATERIAL REQUIRED.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr.No.** | **Material** | **Required** | **Available** | **Balance required** |
| 1 | Axes | 50 Nos. | 25 Nos. | 25 Nos. |
| 2 | Bamboos 8’ -10’ | 400 Nos. | 200 Nos. | 200 Nos. |
| 3 | Chouldaries | 8 Nos. | 4 Nos. | 4 Nos. |
| 4 | E.G.Bags | 200 Nos. | 100 Nos. | 100 Nos. |
| 5 | Generator | 4 Nos. | 2 Nos. | 2 Nos. |
| 6 | Kassi with Handle | 100 Nos. | 50 Nos. | 50 Nos. |
| 7 | Lantern | 100 Nos. | 50 Nos. | 50 Nos. |
| 8 | Torches | 100 Nos. | 50 Nos. | 50 Nos. |
| 9 | Gunny Bags | 400 Nos | 200 Nos | 200 Nos |
| 10 | Kerosene Oil | 1000 Ltr. | 500 Ltr. | 500 Ltr. |
| 11 | Diesel /Petrol | 800 Ltr. | 400 Ltr. | 400 Ltr. |
| 12 | Folding Chair | 8 Nos. | 4 Nos. | 4 Nos. |
| 13 | Folding Chairs | 8 Nos. | 4 Nos. | 4 Nos. |

Note: The required quantity will be purchased before Flood season 2021.

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

1. Roads Dhole Wala Head to Shah Wala Groyne.
2. Head Regulator Dhole Wala
3. Inundation Canal System

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CHAPTER

14

**Chapter-14**

14.1**RESHUFFLING / RECOUPING PLAN OF RESERVE STOCK OF STONE ON KOT ADU CANAL DIVISION KOT ADU**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Circle / Division** | **Name of Structure** | **Location RD. Where Stone is Lying** | **Sanctioned Reserve Stock Limit (in lac Cft)** | **Available quantity** | **Balance Qty of Stone required** | **Remarks** |
| Muzaffargarh/ Kot Adu | J-Head Spur Bait Angra | J-Head | 1.50 | 1.50 | Nil |  |
| Muzaffargarh/ Kot Adu | J-Head Spur Jhunjhanwali | J-Head | 1.50 | 0.41 | 1.09 |  |
| Muzaffargarh/ Kot Adu | J-Head Spur Pirhar Gharbi | J-Head | 1.50 | 0.95 | 0.55 |
| Muzaffargarh/ Kot Adu | J-Head Spur Khar Gharbi | J-Head | 1.50 | 0.47 | 1.03 |
| Total | | | 6.0 | 3.33 | 2.67 |  |

**Note:**  In case of emergency stone will be recouped through resourceful Government contractor.

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14.2 **DETAIL OF INLET / OUTLET CROSSING ALONG WITH CLOSING**

**METHODOLOGY ON KOT ADU CANAL DIVISION KOT ADU**

**INLET AT RD.9810 DHOLEWALA GROYNE**

14.3 **MACHINERY DEPLOYMENT PLAN IN KOT ADU CANAL DIVISION KOT ADU.**

**(MEDIUM TO HIGH FLOOD)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Name of Embankment / Bund** | **Length / Width** | **Miles** | **Requirement of Machinery during Floods** | | | |
| **Excavator** | **Dozers** | **Dump Truck** | **Tractor Trollys** |
| 1 | Dhollewala Groyne | 22500 | 4.5 | 1 | 0 | 2 | 4 |
|  |  |  |  |

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14.4 **ACTION PLAN FOR DEVELOPMENT OF MACHINERY AND LABOUR AT KOT ADU CANAL DIVISION (MEDIUM TO HIGH STAGE)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.#** | **Name of Structure** | **Length**  **(In Mile)** | **Vulnerable Reach** | **Camp Location** | **Site In-charge by Name and Cell. #** | **Machinery / Labour Deployed** | | | | | **Availability of Stone Cft** |
| **Excavator** | **Dozers** | **Trolleys / Dumpers** | **Tractor with Front Blade** | **Labour Beldar +Mate** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 1 | Dhole Wala Groyne | 4.50 | RD;9000-10000 | RD;9000 | Ghulam Mehboob Rabbani  Section Kot Sultan  (03331943600) | 1 | - | 0 | 1 | 15 | Nil |

Note:- There is no Departmental machinery available in the Division except Sand bag Filling Machine. In case of emergency, machinery will be hired through Government Contractor

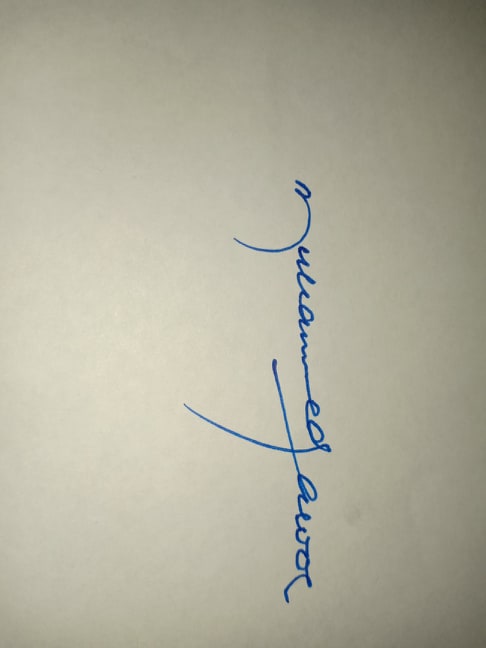
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14.5 **ACTION PLAN FOR DEVELOPMENT OF MACHINERY AND LABOUR AT KOT ADU CANAL DIVISION (EXCEPTIONALLY HIGH STAGE)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.#** | **Name of Structure** | **Length**  **(In Mile)** | **Vulnerable Reach** | **Camp Location** | **Site In-charge by Name and Cell. #** | **Machinery / Labour Deployed** | | | | | **Availability of Stone Cft** |
| **Excavator** | **Dozers** | **Trolleys / Dumpers** | **Tractor with Front Blade** | **Labour Beldar +Mate** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| 1 | Dhole Wala Groyne | 4.5 | RD. 9000-10000 | RD. 9000 | Ghulam Mehboob Rabbani  Section Kot Sultan  (03331943600) | 2 | 1 | 4 | 2 | 25 | Nil |

Note:- There is no Departmental machinery available in the Division except Sand bag Filling Machine. In case of emergency, machinery will be hired through Government Contractor 

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14.6 **POLICE DEPLOYMENT PLAN OF KOT ADU CANAL DIVISION KOT ADU**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SR.#** | **NO OF DEPLOYMENT** | | **HEAD REGULATOR DHOLE WALA** | **RD. 9-10 DHOLEWALA GROYNE** |
| 1 | A.S.I | 2 | 1 | 1 |
| 2 | Constable | 8 | 4 | 4 |

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr.No.** | **Name of Item** | **Unit** | **Available** | **Required** | **Status** |
| 1 | Synthetic Bags capacity 500 Kg | No. | NIL | 500 | Balance quantity will be procured before flood season 2021. |
| 2 | Synthetic Bags capacity 1000 Kg | No. | NIL | 200 |
| 14.8 **DETAIL OF POLYTHINE SHEETS OF BLACK COLOR TO PROTECT UPSTREAMS SLOPE AGAINST WAVE ACTION AND TO CONTROL SEEPAGE THROUGH EMBANKMENTS** | | | | |
| 3 | Polythene Sheets of Black Color | Sft | NIL | 10000 |
|  |  |  |  |  |

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CHAPTER

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