

Table A.2.1-3

CLASSIFICATION OF CANALS IN FRESH AND SALINE AREAS.
SEEPAGE TEST RESULTS, AND SEEPAGE TESTS TO BE DONE

Category	Classification of Canals in Fresh and Saline Areas.			LJC System			LCC System			CBDC System			Total		
	Seepage Test Results, and Seepage Tests to be Done	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)
A.	Canals in the Study Area	216	1,980.6	399	3,787.4	102	847.3	717	6,615.3						
	Distributaries	87	1,320.0	178	2,681.2	34	509.7	299	4,510.9						
	Minors	129	660.6	221	1,106.2	68	337.6	418	2,104.4						
B.	Canals in the Fresh Area	89	851.9	186	1,779.4	36	250.4	311	2,881.7						
	Distributaries	37	581.5	84	1,262.1	20	210.1	141	2,053.7						
	Minors	52	270.4	102	517.3	16	40.3	170	828.0						
C.	Canals in the Saline Area	127	1,128.7	213	2,008.0	66	596.9	406	3,733.6						
	Distributaries	50	738.5	94	1,419.1	14	299.6	158	2,457.2						
	Minors	77	390.2	119	588.9	52	297.3	248	1,276.4						
D.	Seepage Tests Completed														
	D.1	Distributaries	14	326.4	21	720.9	4	112.8	39	1,160.1					
	D.1.1	Canals in the Fresh Area	3	69.0	7	263.7	1	25.6	11	358.3					
		Canals in the Saline Area	11	257.4	14	457.2	3	87.2	28	801.8					
	D.2	Minors	44	227.3	72	366.8	14	104.7	130	698.8					
		Canals in Fresh Area	12	63.4	26	145.6	2	3.5	40	212.5					
	D.2.2	Canals in Saline Area	32	163.9	46	221.2	12	101.2	90	486.3					
		Distributaries and Minors	58	553.7	93	1,087.7	18	217.5	169	1,858.9					
	D.3.1	Canals in Fresh Area	15	132.4	33	409.3	3	29.1	51	570.8					
		Canals in Saline Area	43	421.3	60	678.4	15	188.4	118	1,288.1					
	D.3.2.1	Selected at this F/S Stage #1	20	200.7	24	324.0	9	131.6	53	656.3					
		Distributaries	5	104.9	7	237.8	2	56.4	12	399.1					
	D.3.2.2	Minors	17	95.8	17	86.2	7	75.2	41	257.2					
		To be Selected at the Next Stage	13	129.3	1	19.00	6	56.9	20	205.2					
	D.3.2.3	Distributaries	5	79.6	1	19.00	1	30.8	7	147.4					
Minors		8	31.7	—	—	5	26.1	13	57.8						
Other Projects (ADB)		—	—	17	152.5	—	—	17	152.5						
D.3.2.4	Distributaries	—	—	2	82.0	—	—	2	82.0						
	Minors	—	—	15	70.5	—	—	—	70.5						
E.	Little Effect of Lining	10	91.4	18	182.9	—	—	28	274.3						
	Distributaries	3	55.0	4	118.3	—	—	7	173.3						
	Minors	7	36.4	14	64.6	—	—	21	101.0						
Seepage Tests to be Done (C-D.3.2)		84	707.4	153	1,329.6	51	408.5	288	2,445.5						

#1 Number and length of the proposed canals for lining are 45 and 541km, respectively, excluding 8 minors and the existing lined sections.

Table A.2.1-4 (1/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(1) KIRANA CANAL DIVISION (LIC - 1/4)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement		
					WAPDA (1971)	MOF (1980-90)		Inflow-Outflow Method		Ponding Method
								Disty.	Minor	
Southern Feeder	1. Faqirian	R	10.00	13+793	S	S				
	2. Doe Wal	R	80.00	93+024	S	S	○			
	3. Hujjan	R	207.00	111+473	S	S	○	E (○)		
Southern Branch	4. Jhol Pur	R	30.60	44+850	F	F				
	5. Bucha	L	33.00	53+612	F	F				
	6. Melay	R	21.00	26+670	F	F				
	7. Chokera	R	118.00	90+000	S	S	○	E (X)	E BL	
	8. Lalian	R	375.00	184+000	S	S	○	E (○)	E (○), CL	
	9. Kirana	R	440.68	210+000	S	S	○	E (○)	E (○), E E (○), CL, R	
	10. Malke	R	59.00	63+224	S	S	○			
	11. Bhabra	R	19.00	28+000	F	F				
Khadir Branch	12. Mamrana	L	5.00	10+670	F	F				
	13. Midh	L	3.00	16+900	F	F				
	14. Nasir Pur	R	7.00	32+650	F	F				
	15. Jallap	R	6.25	14+550	F	F				
	16. Badin	L	6.50	23+050	F	F				
	17. Eoda	R	24.00	38+136	F	F				
	18. Khadir	R	235.00	273+600	F	F				
	Total Length				1,329,102 (ft.)	265.82 (canal mile)				

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
 F: Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
 NA: Data Not Available
 E: Measurement of Earth Canal (○ shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)
 E,E: Measurement of Earth-Canal, Head and Tail Reaches, or Different Minors
 BL: Measurement of Brick Lining Section
 CL: Measurement of Concrete Lining section
 R: Measurement of Rock Cutting section
 : Selected at this F/S Stage
 Δ: To Be Selected at the Next Stage
 ▲: Little Effect of Lining
 ◇: Selected by other Projects (ADB)

Table A.2.1-4 (2/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES

(2) RASUL HEADWORKS DIVISION (LJC - 2/4)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	MOF (1980-90)		JICA (1996)	Inflow-Outflow Method
Lower Jhelum Canal	1. Pakhowal	R	21.00	24+500	F	S			
	2. Mona	R	32.00	24+100	F	S			
	3. Ratto Kala	R	98.50	82+066	F	S			
	4. Dhori	L	7.00	20+107	S	S			
	5. Jaspal	L	5.00	2+670	S	S			
	6. Chabba	R	17.00	38+561	S	S			
	7. Salam	L	23.00	31+307	S	S			
	8. Fateh Pur	R	59.50	59+500	S	S			E (O)
	9. Mithalak	L	152.00	137+712	S	S			
	10. Saughara	L	8.00	11+500	S	S			
	11. Beri Wala	L	11.94	30+600	S	S			
	12. Lak	R	79.50	71+250	S	S			E (X)
	13. Sakesar	R	30.00	36+750	S	S			
	14. Lude Wala	L	10.00	20+500	S	S			
	15. Mari	R	12.50	21+883	F	S			
			Total Length	613,969 (ft.)					
				122.79 (canal mile)					

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)

NA : Data Not Available

E, E: Measurement of Earth Canal (O: shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)

BL: Measurement of Brick Lining Section

CL: Measurement of Concrete Lining section

R: Measurement of Rock Cutting section

: Selected at this F/S Stage

Δ: To Be Selected at the Next Stage

▲: Little Effect of Lining

◇: Selected by other Projects (ADB)

Table A.2.1-4 (3/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTUARIES

(3) SARGODHA CANAL DIVISION (LJC - 3/4)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	JICA (1980-90)		Inflow-Outflow Method	Ponding Method
Sulki Branch	1. Bharat	R	27.30	55+988	F	S			
	2. Blochra	L	5.00	12+500	S	S			E(X)
	3. Dhrema	L	6.50	29+770	S	S			E(O)
	4. Jahanabad	R	5.00	15+500	F	S			
	5. Rasulabad	L	3.00	8+450	F	F			
	6. Faruka	L	106.00	116+000	F	F			
	7. Ghazni	L	235.00	61+600	F	F			
	8. Rabana	L	35.00	54+000	F	F			
	9. Nure Wala	L	88.00	123+990	F	F			
	10. Kakrani	R	39.00	64+080	F	F			
	11. Sahiwal	L	59.00	101+700	F	F			
	12. Bhek	R	65.00	76+727	S	S			
Sulki Branch Nothem Branch	13. Jani	L	17.00	18+955	S	S			E(X)
	14. Charnali	L	35.00	29+530	S	S			
	15. Pindi	R	16.00	22+500	S	S			E(O)
Ghazni Distributary	16. Kounan	R	5.41	8+800	S	S			
	17. Khatwan	L	14.50	26+030	S	S			E(O)
	18. New Khatwan	L	11.50	15+773	S	S			
	19. Rurala	R	21.00	29+000	S	S			
	20. Mallo Wal	R	37.00	4+500	S	S			
	21. Gapwa	R	6.00	13+030	S	S			
	22. Chitraur	R	20.00	26+312	S	S			
	23. Pathan	L	5.00	8+310	S	S			
	24. Silan Wali	L	17.00	17+580	S	S			
	25. Mangwana	R	32.00	29+800	S	S			
Massan Distributary	26. Naurang	R	190.00	171+660	S	S			E(O)
	27. Raundana	L	117.00	18+600	S	S			E(O)
	28. Sobhi	R	23.17	44+150	S	S			
	29. Tharra Umra	L	6.00	4+400	F	F			
	30. Jhanda	R	26.05	56+600	F	F			
	31. Massan	L	161.00	173+000	F	F			
	32. Raju Branch	L	36.00	73+600	F	F			
33. Kot Sultan	L	61.00	123+000	F	F				
				Total Length	1,635,417 (ft.)				
					327.08 (canal mile)				

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 F: Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
 NA: Data Not Available
 E: Measurement of Earth Canal (O: shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)
 E,E: Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
 BL: Measurement of Brick Lining Section
 CL: Measurement of Concrete Lining section
 R: Measurement of Rock Cutting section
 : Selected at this F/S Stage
 Δ: To Be Selected at the Next Stage
 ▲: Little Effect of Lining
 ○: Selected by other Projects (ADB)

Table A.2.1-4 (4/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(4) SHAHPUR CANAL DIVISION (LJC - 4/4)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	JICA (1980-90)		Inflow-Outflow Method	Ponding Method
Shah Pur Branch									
1. Wester Feeder		R	61.00	56+000	F	S	F		
2. Rakh Miani		L	19.00	19+000	F	S	F		
3. Jiwan Wal		L	4.00	3+000	F	S	F		
4. Wijhi		L		5+000	F	S	F		
5. Awan		R	11.00	16+663	F	S	F		
6. Dewas		L	9.00	11+000	F	S	F		
7. Pindi Kut		R	65.00	43+000	F	S	F		
8. Chak Qazi		L	19.00	21+200	F	S	F		
9. Khan Mohammad Wala		R	12.00	24+530	F	S	F		
10. Kot Hamiana		L	11.50	13+500	F	S	F		
11. Chak Misran Dich		R	4.50	2+225	F	S	F		
12. Rani Wah		L	73.00	48+700	F	S	F		
13. Dhal		R	9.50	17+560	F	S	F		
14. Khuda Bux		L	78.00	74+945	F	S	F		
15. Nabba		R	41.00	46+557	F	S	F		
16. Kalara		L	116.00	100+735	F	S	F		
17. Suddar		L	210.00	82+000	F	S	F		
18. Suidal		R	33.30	35+750	F	S	F		
19. Bakkar		R	10.00	13+815	F	S	F		
20. Hussain Shah		L	18.60	66+000	F	S	F		
21. Shah Pur		R	51.00	50+000	F	S	F		
				Total Length	751,180 (ft.)				
					150.24 (canal mile)				

Notes: S: Saline Ground Water (1,500 ppm or more. Spec. is not available for MOF data)

F: Fresh Ground Water (less than 1,500 ppm. Spec. is not available for MOF data)

NA: Data Not Available

E: Measurement of Earth Canal (O: shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)

E.E: Measurement of Earth Canal, Head and Tail Reaches, or Different Minors

BL: Measurement of Brick Lining Section

CL: Measurement of Concrete Lining section

R: Measurement of Rock Cutting section

○: Selected at this F/S Stage

△: To Be Selected at the Next Stage

▲: Little Effect of Lining

◇: Selected by other Projects (ADB)

Table A.2.1-4 (S/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL

DATA BASE OF DISTRIBUTARIES

(S) FAISALABAD CANAL DIVISION (LCC - 1/7)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater			(8) Recommended by PID (1996)	(9) Method of Seepage Measurement		
					WAPDA (1971)	MOF (1980-90)	JICA (1996)		Inflow-Outflow Method	Ponding Method	
Jhang Branch Upper	1. Annah	L	18.50	28+700	F	F	S				
	2. Tharta Raika	L	6.80	12+630	F	F	F				
	3. Pindi Bhattian	R	119.00	26+900	F	F	F				
	4. Noon	R	9.80	9+920	F	F	F				
	5. Beron Wala	L	23.00	29+825	F	F	F				
	6. Mallian	R	7.70	13+020	F	F	F				
	7. Kubhrika	L	11.00	10+110	F	S	F				
	8. Junian Wala	R	20.12	26+490	F	S	S				
	9. Walianan Wala	R	21.20	40+225	F	S	F				
	10. Ayal Wala	L	13.05	10+750	F	S	F				
	11. Burali	L	47.00	42+014	F	S	F				
	12. Chiniot	R	158.00	161+153	F	F	F				
	13. Kot Ghani	L	9.50	32+117	F	F	F			E (X)	
	14. Kot Ahmad Yar	L		47+710	F	S	F				
	15. Sarang Wala	L		82+079	S	S	S			E (O)	
	16. Jurnal Jatti	R		23+808	F	F	F				
	17. Gugiana	L		28.90	38+304	S	S				E (X), E (X)
	18. Khai	L		43.00	76+456	S	S				
	19. Nasrana	L		273.00	179+251	S	S				E (O)
	20. Pabber Wala	R		21.00	27+960	F	F	F			
	21. Kangra	R		4.80	6+130	F	F	F			
	22. Madduana	L		67.90	63+200	S	S	F			
	23. Wagh Wala	R		46.00	46+134	F	F	F			
			Total Length	1,034,916 (ft.)				206.98 (canal mile)			

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
 F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
 NA : Data Not Available
 E : Measurement of Earth Canal (O : shows seepage is more than 5 cfm/sf, X : less than 5 cfm/sf)
 E.E : Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
 BL : Measurement of Brick Lining Section
 CL : Measurement of Concrete Lining section
 R : Measurement of Rock Cutting section
 Selected at this F/S Stage
 ▲ : To Be Selected at the Next Stage
 ◀ : Little Effect of Lining
 ◇ : Selected by other Projects (ADB)

Table A.2.1-4 (6/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES

(6) HAFIZABAD CANAL DIVISION (LCC - 2/7)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	JICA (1980-90)		Inflow-Outflow Method	Ponding Method
Lower Chenab Canal	1. Uddoki	R	41.60	62+000	F	F			
	2. Nehrianwala-Cum-Sukhki	R	44.00	88+458	F	F			
Rakh Branch	3. Mochi Wala	L	24.90	38+878	S	F			
	4. Rattu	R	8.80	21+195	F	F			
	5. Farida	L	38.00	7+300	S	F			
	6. Chorawala	L	19.40	24+000	S	F			
	7. Dabora	R	56.77	49+100	S	F			
	8. Moranwala	L	21.00	13+023	S	F			
	9. Giltuana	R	14.80	8+782	S	F			
	10. Sangla	L	6.10	3+285	S	F			
	▲ 11. Aruri	R	62.40	49+290	S	S			E (X)
	12. Akil	L	39.40	49+132	S	S			○
	13. Arbi	R	53.10	37+634	S	S			○
	14. Mukhiana	L	30.20	30+204	S	S			○
	15. Lathianwala-I	L	40.90	11+135	S	S			
	16. Lathianwala-II	L	15.51	13+100	S	S			
	17. Khair Ali	R	47.21	46+400	S	S			
	18. Rasulpur	L	5.40	3+969	S	S			
	19. Gatti	L	13.00	23+335	S	S			
	20. Lakhuaana	L	128.30	59+205	S	S			
	21. Gattwala	R	6.63	16+340	S	S			
	22. Paoca Mari	R	10.00	14+605	S	S			
	23. Sir Wala	R	47.70	33+362	S	S			
	24. Tul Wala	R	39.00	38+300	S	S			
	◇ 25. Dijkot	L	276.00	144+800	S	S			E (O) E (O)
			Total Length	886,832 (ft.)					
				177.37 (canal mile)					

Notes: S: Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
 F: Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
 NA: Data Not Available
 E: Measurement of Earth Canal (○ shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)
 E,E: Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
 BL: Measurement of Brick Lining Section
 CL: Measurement of Concrete Lining section
 R: Measurement of Rock Cutting section
 : Selected at this F/S Stage
 ▲: To Be Selected at the Next Stage
 ▲: Little Effect of Lining
 ◇: Selected by other Projects (ADB)

Table A.2.1-4 (7/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(7) JHANG CANAL DIVISION (LCC - 3/7)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater			(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	MOF (1980-90)	JICA (1996)		Inflow-Outflow Method Disty.	Minor Method
Bhowana Branch	1. Hibbuana	L	3.40	9+868	F	NA	F			
	2. Choti Major	L	7.40	16+854	F	NA	F			
	3. Langrana Major	R	5.50	12+450	F	NA	F			
	4. Sultan Pakhara	L	188.00	180+466	F	NA	F			
	5. Mund Wala	L	20.60	27+724	F	NA	F			E(O)
	6. Mochi Wala	L	51.93	54+230	F	NA	F			
	7. Maghani	R	65.60	64+469	F	NA	F			
	8. Ghannu	L	76.00	94+709	F	NA	F			
	9. Feeder Major	L	193.60	87+769	F	NA	F			
	10. Amin Pur	R	11.22	9+432	F	NA	F			
Sultan Pakhara Distributary	11. Gillotran	R	20.70	50+948	F	NA	F			
	12. Khan Chand	L	36.80	54+207	F	NA	S			
	13. Nila No. 1	L	5.47	12+638	F	NA	S			
	14. Nila No. 2	R	13.70	15+230	F	NA	S			
	15. Faqir Sar	R	74.90	60+095	F	NA	S			
	16. Paeta Anna	L	27.00	16+000	F	F	S			E(X)
	17. Dhaur	R	313.00	207+691	S	F	S			
	18. Nawab Wala	R	10.00	14+000	F	NA	S			
	19. Darsana	L	30.00	72+292	S	F	S			
	20. Tiran Wala	R	37.80	42+700	S	F	S			
Dhaur Distributary	21. Kathore	R	5.00	7+632	S	F	S			
	22. Gojra	L	61.21	49+414	S	F	S			E(O) estimated
	23. Bahmi	R	24.00	29+365	S	F	S			
	24. Kallar	R	32.78	36+697	S	F	S			
	25. Shikar	R	15.50	20+153	S	F	S			
	26. Chapri	L	8.75	7+750	S	F	S			
	27. Guddian	L	35.50	22+900	S	F	S			
	28. Teku Major	L	20.00	45+600	S	F	S			
	29. Khewra	L	390.00	124+100	S	F	F			E(O), E(O)
	30. Bhangu	R	178.00	99+500	S	F	F			E(X)
				Total Length	1,546,861 (ft.)					
					309.37 (canal mile)					

Notes: S : Saline Ground Water (1,500 ppm or more. Spec. is not available for MOF data)

F : Fresh Ground Water (less than 1,500 ppm. Spec. is not available for MOF data)

NA : Data Not Available

E : Measurement of Earth Canal (O shows seepage is more than 5 cfm/msf, X : less than 5 cfm/msf)

E, E : Measurement of Earth Canal, Head and Tail Reaches, or Different Minors

BL : Measurement of Brick Lining Section

CL : Measurement of Concrete Lining section

R : Measurement of Rock Cutting section

Selected at this F/S Stage

△ : To Be Selected at the Next Stage

▲ : Little Effect of Lining

◇ : Selected by other Projects (ADB)

Table A.2.1-4 (3/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES

(8) KHANKI HEADWORKS DIVISION (LCC - 4/7)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater			(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	MOF (1980-90)	JICA (1996)		Inflow-Outflow Method	Ponding Method
Lower Chenab Canal										
1. Mancher		R	131.00	37+800	F	F	F			
2. High Level Channel		R		46+500	F	F	F			
3. Vanike		R	244.00	95+044	F	F	F			
4. Gajar Gola		R	283.00	119+650	F	F	F			
5. Muradian Kharif		R	9.60	31+950	F	F	F			
6. Sagar		R	6.00	1+218	F	F	F			
7. Chak Chatha		L	13.50	17+260	F	F	F			
8. Kot Nikka		R	221.00	91+000	F	F	F			
9. Shah Jamal		L	8.00	37+016	F	F	F			
10. Prem Kot		R	8.00	15+200	F	F	F			
11. Hafiz Abad Cum Channi		L	21.00	59+870	F	F	F			
12. Kot		R	27.00	43+000	F	F	F			
13. Jalal Pur		R	34.00	52+850	F	F	F			
14. Dohatta		L	12.00	28+891	F	F	F			
15. Medhora		R	33.00	64+305	F	F	F			
16. Jandoki		R	50.00	73+935	F	F	F			
				Total Length	815,489 (ft.)					
					163.10 (canal mile)					

Notes: S: Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)

F: Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)

NA: Data Not Available

E: Measurement of Earth Canal (O: shows seepage is more than 5 cfm/msf, X: less than 5 cfm/msf)

E,B: Measurement of Earth Canal, Head and Tail Reaches, or Different Minors

BL: Measurement of Brick Lining Section

CL: Measurement of Concrete Lining section

R: Measurement of Rock Cutting section

: Selected at this F/S Stage

△: To Be Selected at the Next Stage

▲: Little Effect of Lining

◇: Selected by other Projects (ADB)

Table A.2.1-4 (9/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(9) BURALA CANAL DIVISION (LCC - 57)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	JICA (1980-90)		Inflow-Outflow Method	Ponding Method
Burala Branch	1. Chakku	L	3.50	3+000	F	F			
	2. Dulchi	L	14.00	27+090	F	F			
	3. Nupewala	L	47.00	43+300	F	F			
	4. Rajiana	R	18.66	29+300	F	F			
	5. Pithrana	L	17.50	21+984	F	F			
	6. Dauran Wan	R	12.00	16+080	F	F			
	7. Ala	R	19.00	28+500	F	S			
	8. Naurange	L	38.00	25+394	F	S			
	9. Arif	R	20.00	19+300	F	F			
	10. Obhal	R	14.00	37+415	F	F			
	11. Tandalian Wala	L	385.00	119+875	F	S			
	12. Bahliak Branch	L	154.00	147+361	S	S			
	13. Jhoke	L	35.00	48+700	F	F			E (X)
	14. Baloch Wala	R	17.00	24+150	S	F			
	15. Kanya	R	21.00	33+256	S	F			
	16. Killian Wala	L	212.30	151+080	S	F			E (O)
	17. Kanjwani Branch	L	31.00	47+724	F	NA			
	18. Garja	L	3.00	20+061	F	F			
	19. Samundri	R	42.00	62+283	S	F			
	20. Munian Wala	R	9.00	24+183	F	F			
	21. Dhodian	L	11.00	36+793	F	S			
	22. Bhoja	R	126.00	88+600	F	F			
	23. Chark	R	10.00	6+896	F	F			
	24. Kamalia	R	49.00	58+000	F	F			
	25. Waghi	R	74.00	85+000	F	F			
	26. Azmat Shah	R	9.75	7+263	F	NA			
	27. Ditch Right	R	14.00	35+870	F	F			
	28. Ditch Left	L	18.00	30+000	F	F			
	29. Kalera	L	37.00	50+969	F	F			
	30. Kallar	R	136.00	32+814	F	NA			
	31. Kabir Wala	L	185.00	136+600	F	NA			
				Total Length	1,498,766 (ft.)	299.75 (canal mile)			

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
NA : Data Not Available
E : Measurement of Earth Canal (O : shows seepage is more than 5 cfs/msf, X : less than 5 cfs/msf)
E,E : Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
BL : Measurement of Brick Lining Section
CL : Measurement of Concrete Lining section
R : Measurement of Rock Cutting section
Selected at this F/S Stage
▲ : To Be Selected at the Next Stage
▲ : Little Effect of Lining
◇ : Selected by other Projects (ADB)

Table A.2.1-4 (10/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(10) LOWER GUGERA CANAL DIVISION (LCC - 6/7)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater			(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	MOF (1980-90)	JICA (1996)		Inflow-Outflow Method	Ponding Method
Upper Gugera Branch	1. Buchiana	R	25.00	40+489	F	F	F			
Lower Gugera Branch	2. Pauliani	R	100.00	80+900	F	F	S			
	3. Jaran Wala	L	21.00	46+948	F	F	F			
	4. Awagat	R	59.00	68+010	F	F	S			
	5. Butti Wala	R	17.50	18+530	F	F	S			
	6. Jassuana	L	22.30	32+016	F	F	F			
	7. Kheo Wala	R	17.00	24+467	F	F	F			
	8. Khanuana	R	96.30	98+490	F	F	S			
	9. Kaluana	R	19.50	16+310	F	F	F			
	10. Bharuana	R	17.00	25+498	F	F	F			
	11. Safiana	L	32.50	33+350	S	F	F			
	12. Phadiara	R	11.00	31+059	F	F	F			
	13. Talyara	L	11.50	21+700	S	F	S			
	14. Koru	L	8.00	9+250	S	F	S			
	15. Russiana	L	54.00	43+200	S	F	S			
	16. Khatwan	R	17.00	32+600	S	F	S			
	17. Khushpur	L	5.70	2+446	S	F	S			
	18. Bhail	R	35.30	23+862	S	F	S			
	▲ 19. Tarkhani	L	253.00	153+033	S	F	S			
	20. Jani Wala/Hamza	R	44.00	40+643	S	F	S			
	21. Mungi	L	162.00	121+278	S	F	S			
	22. Bhun	L	36.00	54+197	S	F	S			
	23. Yakkar	R	41.50	60+312	S	F	S			
	24. Pir Mahal	L	128.00	156+082	S	F	S			
	25. Dabban Wala	R	74.00	64+300	S	F	S			
	26. Rajana	L	53.00	37+400	S	F	S			
	27. Khikhi	Tail	307.00	142+870	S	F	S			
			Total Length	1,479,240 (ft.)						
				295.85 (canal mile)						

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)

NA: Data Not Available

E: Measurement of Earth Canal (○ shows seepage is more than 5 cfs/msf, X: less than 5 cfs/msf)

E.E: Measurement of Earth Canal, Head and Tail Reaches, or Different Minors

BL: Measurement of Brick Lining Section

CL: Measurement of Concrete Lining section

R: Measurement of Rock Cutting section

▲: Selected at this P/S Stage

△: To Be Selected at the Next Stage

▲: Little Effect of Lining

○: Selected by other Projects (ADB)

Table A.2.1-4 (11/26) II GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(11) UPPER GUGERA CANAL DIVISION (LCC - 77)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement	
					WAPDA (1971)	JICA (1980-90) (1996)		Inflow-Outflow Method	Ponding Method
Upper Gugera Branch	1. Pir Kot	R	3.00	2+927	F	NA			
	2. Junian	R	49.00	65+000	F	F	○		
	3. Kssoki	R	13.00	34+000	F	NA			
	4. Gajiana	R	93.00	131+164	S	NA	○		
	5. Bath	R	7.00	15+974	F	NA			
	6. Manan Wala	R	160.00	139+775	S	F			
	7. Ghourdour	R	43.00	67+900	S	F	○		E
	8. Lagar	R	38.00	62+218	S	NA			
	9. Kabbar Wala	R	22.00	12+064	S	NA			
	10. Innuana	R	20.00	17+632	S	F			
	11. Nillian Wala	R	25.00	28+652	S	F			
	12. Rodi	R	23.00	24+642	S	F			
	13. Shark Pur	L	99.00	172+426	S	F	○		
	14. Machhrala	L	7.50	8+245	S	F			
	15. Mohlan	L	9.00	3+274	S	NA			
	16. High Level Channel	L	92.00	135+887	S	NA			
	17. Nehra	L	122.00	113+193	F	F			
	18. Dangali	L	47.00	85+631	F	NA			
	19. Jalaliana	R	5.00	20+142	F	NA	○		
	20. Mallan	R	92.00	54+195	S	NA			
	21. Khanga	R	13.00	27+082	S	F			
	22. Kingran wala	R	7.00	3+741	S	NA			
	23. Mataba	R	10.00	18+800	S	F			
	24. Mahmian Wala	L	9.00	6+960	S	F			
	25. Khurrian Wala	R	203.00	123+790	S	F	S		
	26. Shahkot	L		153+515	F	F	S		
				Total Length	1,528,829 (ft.)				
					305.77 (canal mile)				

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
 F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
 NA : Data Not Available
 E : Measurement of Earth Canal (○ : shows seepage is more than 5 cfs/msf, X : less than 5 cfs/msf)
 E.E : Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
 BL : Measurement of Brick Lining Section
 CL : Measurement of Concrete Lining section
 R : Measurement of Rock Cutting section
 Selected at this F/S Stage
 ▲ : To Be Selected at the Next Stage
 △ : Little Effect of Lining
 ◇ : Selected by other Projects (ADB)

Table A.2.1-4 (12/26) GROUND WATER QUALITY AND SEEPAGE OF SELECTED CANAL
DATA BASE OF DISTRIBUTARIES
(12) LAHORE CANAL DIVISION (CBDC - I/I)

(1) Head Channel	(2) Distributary	(3) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Quality of Groundwater		(8) Recommended by PID (1996)	(9) Method of Seepage Measurement		
					WAPDA (1971)	MOF (1980-90)		JICA (1996)	Inflow-Outflow Method	Ponding Method
B. R. B. D. Link Lahore Branch	1. Pull Right	R	10.00	5+000	F	NA	F			
	2. Pull Left	L	2.60	5+071	F	NA	F			
	3. Shalamar	R	30.00	30+000	F	NA	F			
	4. Kaura	L	44.00	36+378	F	NA	F			
	5. Government House	R	24.00	9+000	F	NA	F			
	6. Model Town	L	12.00	8+950	F	NA	F			
	7. Khamba	L	21.00	33+400	F	NA	F			
	8. Niazbeg	Front		213.50	185+240	F	S	S		
	9. Terah	L	13.80	19+213	F	S	F	F		
	10. High Level Gohava	R	14.37	17+290	F	S	F	F		
B. R. B. D. Link	11. Khaira	R	140.62	103+393	F	S	F	F		
	12. Kohrian	L		34+000	F	NA	F	F		
	13. Reverse Channel	L	20.00	15+377	F	NA	F	F		
	14. Buchar Khana	R	243.33	157+075	F	NA	S	S		
	15. Ghawind	L		22+000	F	NA	F	F		
	16. Khalra	R	42.00	57+000	F	NA	F	F		
	17. Chartianwala	L	10.00	15+270	F	NA	F	F		
	18. Ditch	L	19.00	45+752	F	NA	F	F		
	19. Raiwind	R	85.00	102+550	F	NA	F	F		
	20. Tharman	L	224.00	101+420	S	S	S	S	E(O)	
Main Branch Lower	21. Bedian	R	12.50	32+355	F	NA	S	S	E(O)	
	22. Sirhali	L	21.00	27+000	F	S	F	F		
	23. Duffu	L	16.50	16+887	F	NA	F	F		
	24. Pandoki	R	7.50	18+500	F	NA	F	F		
	25. Lulliani	L	49.91	36+575	F	NA	F	F		
	26. Chhina	L	108.00	83+556	S	F	S	S	E(O)	
	27. Zaffarke	R	62.00	24+456	S	F	S	S		
	28. Turkwind	R	90.00	93+312	S	NA	S	S		
	29. Handal	L	91.00	83+850	S	F	F	F	E(O)	
	30. Rakh	R	202.00	101+000	F	NA	S	S	E(O)	
B. S. Link	31. Maujoke	L	51.00	26+410	S	NA	S	S		
	32. Vahn	R	215.00	83+140	S	F	S	S		
	33. Raiwind No. 2	R	17.00	15+297	F	NA	F	F		
	34. Pattoki Left Channel	R	17.53	25+500	F	NA	NA	NA		
			Total Length	1,671,217 (ft.)						
				334.24 (canal mile)						

Notes: S : Saline Ground Water (1,500 ppm or more, Spec. is not available for MOF data)
F : Fresh Ground Water (less than 1,500 ppm, Spec. is not available for MOF data)
NA : Data Not Available
E : Measurement of Earth Canal (O : shows seepage is more than 5 cfs/msf, X : less than 5 cfs/msf)
E,E : Measurement of Earth Canal, Head and Tail Reaches, or Different Minors
BL : Measurement of Brick Lining Section
CL : Measurement of Concrete Lining Section
R : Measurement of Rock Cutting Section
: Selected at this F/S Stage
Δ : To Be Selected at the Next Stage
▲ : Little Effect of Lining
◇ : Selected by other Projects (ADB)

Table A.2.1-4 (13/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(1.1) KIRANA CANAL DIVISION (LJC-1.1/4)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Deowal Distributary Hoijan Distributary	S	S	S	L	10.00	22+488	
	S	S	S	L	10.50	17+800	
				L	21.00	22+250	
				R	15.00	20+785	
				R	11.85	18+904	
				R	6.00	9+215	
				L	10.00	19+250	
				L	12.00	15+873	
				L	20.00	27+300	
				R	8.00	6+648	
Jhol Pur Distributary Bucha Distributary	F	S	F	L	3.50	3+413	
	F	S	F	L	5.50	19+500	
	S	S	S	R	9.00	14+770	
				R	7.00	4+800	
Chokera Distributary				R	7.00	25+665	
				L	26.00	24+300	
				L	14.00	32+800	
				L	5.50	15+000	
				L	9.50	23+270	
				R	18.00	27+363	
Lalian Distributary				L	10.00	21+604	
				L	19.00	16+445	
				L	8.00	12+525	
				L	27.50	17+545	
				L	7.00	9+330	
				L	20.50	19+300	
				L	4.20	2+800	
				L	10.00	9+850	
				R	4.50	5+200	
				R	13.00	13+450	
				R	33.00	33+330	
				L	13.00	22+290	
				L	9.00	13+000	
				R	17.50	19+800	
				R	14.00	16+135	
				L	10.00	13+440	
Kirana Distributary							

Table A.2.1-4 (14/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(1.2) KIRANA CANAL DIVISION (LJC-1.2/4)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Malke Branch Distributary	S	S	37. Dhabian	R	14.00	25+950	
Khadir Branch	F	S	38. Mian Sub-Minor	R	6.50	8+720	
Bahbra Distributary	F	S	39. Maira	R	4.50	13+316	
Boda Distributary	F	S	40. Dhingran	R	4.00	5+820	
Khadir Distributary	F	S	41. Ahmada	R	7.50	24+000	
		S	42. Laksin	L	3.50	12+550	
		S	43. Kot Naja	L	10.00	20+700	
			44. Thatt Chandu	R	11.00	25+231	
			45. Ahmad Nagar	L	8.00	16+730	
			46. Pillo Wal	L	11.00	29+715	
			47. Khai	L	19.00	33+362	
			48. Jabana	L	4.50	7+908	
			49. Walla	L	13.00	18+358	
			50. Pir Panja	L	7.00	20+050	
			51. Brana	R	3.50	4+200	
			52. Wijhalke	L	3.50	11+500	
			53. Kanian	R	3.00	10+200	
			54. Kaln	L	3.00	11+976	
Total Length						917,724	(ft.)
						183.54	(canal mile)

Table A.2.1-4 (15/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(2) RASUL HEADWORKS DIVISION (LJC-2/4)

(1) Head Channel	(2) Quality of Groundwater			(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)	JICA (1996)					
Lower Jhelum Canal Ratto Kala Distributary	S	S	S	1. Kaiyan Pur	R	4.50	13+000	
	F	S	S	2. Kot Hakim Shah	R	9.50	9+500	
Fateh Pur Distributary Mithalak Distributary	S	S	S	3. Hathi Wind Sub-Minor	R	5.00	9+700	
	S	S	S	4. Nabi Shah	R	12.50	9+500	
Lak Distributary	S	S	S	5. Bhalwal	L	8.00	13+000	
	S	S	S	6. Civil Station	R		5+820	
	S	S	S	7. Khizar Hayat	L	5.50	8+170	
	S	S	S	8. Bunga	R	11.00	15+775	
	S	S	S	9. Khe Wala	L	13.70	26+080	
Lude Wala Distributary Man Distributary	S	S	S	10. Ajnala	L	12.90	12+558	
	F	S	S	11. Javed	L	4.00	6+920	
Total Length							130,023	(ft.)
							26.00	(canal mile)

Table A.2.i-4 (16/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(3) SARGODHA CANAL DIVISION (LJC-3/4)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Bharat Distributary	F	S	F	L	4.30	10+263	
Faruka Distributary	F	S	S	L	19.00	32+412	
Chazni Distributary	F	S	F	R	7.00	12+660	
	F	S	F	R	17.00	23+350	
Rabana Distributary	F	S	S	L	7.25	8+000	
Nure Wala Distributary	F	S	F	R	8.35	14+500	
				R	3.00	8+350	
Sahiwal Distributary	F	S	F	R	18.00	46+500	
Bhek Distributary	S	S	S	R	5.75	14+400	
Northern Branch	S	S	S	L	6.00	16+445	
				L	2.00	2+295	
Chamali Distributary	S	S	S	R	4.70	10+200	
Mailo Wal Distributary	S	S	S	R	9.00	16+822	
				R	5.00	8+500	
Mangwana Distributary	S	S	S	R	8.90	12+500	
Naurang Distributary	S	S	S	R	9.70	14+036	
				L	7.00	20+170	
				R	5.00	11+995	
				R	7.60	14+010	
				R	8.00	16+600	
				L	2.00	10+381	
Sobhi Distributary	S	S	S	R	3.00	7+150	
Jhanda Distributary	F	S	S	R	4.00	10+022	
Massan Distributary	F	F	F	R	16.00	38+520	
				R	18.00	41+250	
Raju Branch Distributary	F	F	S	R	5.50	16+250	
Kot Sultan Distributary	F	S	S	R	11.00	26+0+5	
Total Length						463,626 (ft.)	
						92.73 (canal mile)	

Table A.2.1-4 (17/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(4) SHAHPUR CANAL DIVISION (LJC-4/4)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Western Feeder Distributary	F	S	F	L	7.50	18+800	
				R	15.00	31+000	
				R	4.00	11+000	
				L	3.10	4+000	
Pindi Kot Distributary	F	S	S	R	35.00	33+000	
				R	16.00	21+000	
Rani Wah Distributary	F	S	F	L	41.00	23+132	
				R	8.25	15+557	
				L	15.00	20+000	
				L	5.00	12+800	
Nabha Distributary	F	S	F	R	18.00	8+500	
Kalara Distributary	F	S	F	R	17.00	19+570	
Saddar Distributary	F	S	S	L	12.00	17+000	
				L	106.50	68+400	
				L	6.50	10+000	
				R	28.00	34+200	
				L	3.00	5+500	
				L	6.00	10+500	
				R	9.00	14+350	
				L	11.50	12+000	
				L	8.50	13+000	
				L	5.00	5+300	
				L	12.00	18+400	
Shaidal Distributary	F	S	F	R	3.50	3+000	
Hussain Shah Distributary	F	S	S	R	7.50	12+000	
				R	9.50	14+000	
				L	11.60	11+910	
				R	19.00	24+000	
				R	5.00	5+390	
				R	30.00	39+000	
				L	35.00	35+000	
				L	7.10	4+100	
				L	7.00	14+000	
				L	3.50	5+270	
				R	33.50	46+000	
				R	3.50	4+000	
				R	6.10	10+000	
Total Length						654,679 (ft.)	
						130,94 (canal mile)	

Table A.2.1-4 (18/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(5) FAISALABAD CANAL DIVISION (LCC-1/17)

(1) Head Channel	(2) Quality of Groundwater			(3) Minor	(4) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)	JICA (1996)					
Jhang Branch Upper	S	S	S	1. Hinduana	L	3.75	8+460	
Pindi Bhattian Distributary	F	F	S	2. Hujjan	L	34.00	13+450	
Noon Distributary	F	F	F	3. Shah Bahlol	R	1.04	4+195	
Beran Wala Distributary	F	F	S	4. Ramuana	L	4.11	6+802	
Mallian Distributary	F	F	S	5. Astoti	L	3.99	5+900	
Juan Wala Distributary	F	F	S	6. Badar Ali	R	2.00	5+690	
Walanian Wala Distributary	F	S	F	7. Pacca	R	5.00	7+650	
Burali Distributary	F	S	F	8. Shaikhan	R	1.90	7+500	
Chinot Distributary	F	F	F	9. Sir Wala	R	3.00	8+638	
	F	S	S	10. Chauri	L	7.64	5+820	
	F	F	F	11. Sathol	L	3.40	7+476	
	F	F	F	12. Kot Wala	L	4.00	11+710	
				13. Kot Wasawa	L	13.90	28+452	
				14. Risalu	L	4.70	10+410	
				15. Thatta Fateh Ali	L	3.60	5+982	
				16. Jhamb	L	12.50	23+183	
				17. Sir Nanga	L	3.70	5+150	
Kot Ghani Distributary	F	F	F	18. Rajoia	L	2.50	9+267	
Kot Ahmad Yar Distributary	F	S	F	19. Makku Wala	L	1.50	7+623	
				20. Majid Wala	L	6.61	7+180	
				21. Kamoda	R	4.80	4+000	
Sarang Wala Distributary	S	S	S	22. Lodhran	L	5.50	7+250	
Jamal Jari Distributary	F	F	F	23. Badar Din	L	2.55	4+450	
Nasrana Distributary	S	S	S	24. Saidduana	L	4.00	7+925	
				25. Khilian	R	9.80	14+532	
				26. Nar Wala	L		19+103	
				27. Sattana	R	8.00	12+002	
				28. Nathen	L	4.00	15+097	
				29. Dumra	L	19.20	18+065	
				30. Sati Wala	L	13.79	24+095	
Madduana Distributary	S	S	S	31. Karim Pur	R	7.50	4+850	
				32. Riwarz Abad	L	6.00	7+000	
Wagh Wala Distributary	F	F	F	33. Jain Wala	R	6.40	17+626	
Total Length							346,533	(ft.)
							69.31	(canal mile)

Table A.2.1-4 (19/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(6) HAFIZABAD CANAL DIVISION (LCC-2/7)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Uddoki Distributary	F	F	S	L	16.03	38+470	
Nehran Wala Distributary	F	F	F	L	3.00	5+006	
Sukheki Distributary	F	F	F	L	9.66	23+320	
Mochiwala Distributary	S	F	F	R	5.10	7+600	
Faunda Distributary	S	F	F	L	17.00	4+500	
				R	12.20	4+000	
Dabora Distributary	S	F	S	R	12.36	22+666	
				R	9.71	14+470	
Aruri Distributary	S	S	S	R	16.91	18+863	
Rakh Branch Distributary	S	S	S	L	5.40	+660	
Lakhuana Distributary	S	S	S	L	12.76		
				R	36.50	38+796	
				L	9.60	6+564	
				L	6.30	11+337	
Rakh Branch Distributary	S	S	S	L	6.40	3+282	
Tul Wala Distributary	S	S	S	R	17.60	23+700	
Dijkot Distributary	S	S	S	L	17.50	11+166	
				R	43.00	38+500	
				L		9+270	
				R	17.00	23+541	
				L	11.50	13+025	
				R	21.50	17+784	
				L	11.00	12+375	
				R	15.00	19+445	
Total Length						368,340 (ft.)	
						73.67	(canal mile)

Table A.2.1-4 (20/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(7) JHANG CANAL DIVISION (LCC-3/7)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Sultan Pakhra Distributary	F	NA	F	L	14.50	8+614	
				R		29+000	
Mund Wali Distributary	F	NA	F	L	4.70	2+680	
				L	6.61	11+492	
Mochi Wala Distributary	F	NA	F	R	4.35	13+006	
				R	5.60	6+500	
Feeder Major Distributary	F	NA	F	R	4.30	1+000	
				L	8.60	12+788	
Maghani Distributary	F	NA	F	R	4.72	10+646	
				L	9.04	19+060	
Ghannu Distributary	F	NA	F	R	12.20	19+410	
				R	1.30	10+989	
Fagir Sar Distributary	F	NA	F	R	12.28	28+500	
				R	7.80	3+495	
Pacca Anna Distributary	F	NA	F	L	11.50	18+700	
	S	NA	S	L	5.00	8+870	
Dhauliar Distributary	F	NA	F	L	10.41	9+770	
	S	NA	S	R	8.30	18+000	
Darsana Distributary	F	NA	F	L	10.70	8+972	
	S	NA	S	R	17.50	29+650	
Titran Wala Distributary	F	NA	F	L	30.00	31+500	
	S	NA	S	R	17.60	38+050	
Gojra Distributary	F	NA	F	R	10.90	33+063	
	S	NA	S	L	33.00	50+000	
Teku Major Distributary	F	NA	F	L	2.00	9+992	
	S	NA	S	L	9.80	25+450	
Khewra Distributary	F	NA	F	L	3.50	9+500	
	S	NA	S	R	11.25	4+800	
Bhangu Distributary	F	NA	F	L	10.17	12+650	
	S	NA	S	R	16.00	8+895	
Total Length					5.16	27+200	
						10+445	
Total Length					5.62	7+062	
					4.00	4+750	
Total Length					20.00	10+000	
					17.50	6+400	
Total Length					10.61	4+918	
					3.62	38+316	
Total Length					3.16	14+720	
						14+574	
Total Length						13+180	
						34+150	
Total Length					680.757	(ft.)	
					136.15	(canal mile)	

Table A.2.1-4 (21/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(8) KHANKI HEADWORKS DIVISION (LCC-4/7)

(1) Head Channel	(2) Quality of Groundwater			(3) Minor	(4) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)	JICA (1996)					
Mancher Distributary Q. B. Link	F	F	F	1. Ram Nagar	R	32.00	40+193	
	F	F	F	2. Ram Nagar Truncated	R		10+000	
				3. Akal Garh	L	18.00	21+050	
Mancher Distributary High Level Channel	F	F	F	4. Kot Hara Sub-Minor	L	5.10	10+000	
	F	F	F	5.1R	R		7+100	
				6.2R	R		8+500	
				7.3R	R		7+800	
				8. Dhillwan	L	24.00	15+634	
Vanike Distributary	F	F	F	9. Chak Ghazi	L	20.00	8+800	
				10. Ramke	L	42.00	18+380	
				11. Kharak Sub-Minor	R	6.00	4+050	
				12. Mehdi Abad	R	9.00	10+300	
				13. Rakh Chichra	L	9.00	6+570	
				14. Dhiranke	R	28.00	18+000	
				15. Hazira	R	7.00	3+200	
				16. Baura	L	8.24	4+000	
				17. Bauloo	R	8.52	5+345	
				18. Kot Said Mohammad	L	35.00	36+500	
Hafizabad Cum Channi Distributary	F	F	F	19. Batera	R	6.00	16+280	
				20. Qilia Sahib	R	2.50	4+723	
				21. Lakhia	R	6.53	19+473	
				22. Kanala	L	3.30	4+080	
				23. Ganjanwala	L	3.40	13+135	
				24. Fateh Pur	R	6.60	8+813	
				25. Kassisa	R	20.00	27+431	
Kot Distributary								
Jalal Pur Distributary	F	F	F					
Jandoldi Distributary	F	F	F					
Total Length							329.357	(ft.)
							65.87	(canal mile)

Table A.2.1-4 (22/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(9) BURALA CANAL DIVISION (LCC-5/77)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Nupe Wala Distributary Tandalian Wala Distributary	F	F	S	R	9.00	12+450	
	F	F	S	R	5.00	5+637	
				L	9.00	10+308	
				R	13.00	13+000	
				R	17.00	12+818	
				L	12.00	13+939	
				L	13.30	10+165	
				R	9.00	22+750	
Bahlak Distributary	S	F	S	L	3.50	142+000	
				R	12.00	8+640	
				R	4.00	13+240	
				L	4.00	9+784	
				R	6.00	5+312	
				R	5.00	17+000	
				R	5.00	8+698	
				R	5.00	6+400	
				R	11.00	15+910	
				R	4.00	6+650	
Beloch Wala Distributary	S	F	F	10.00	21+957		
	S	F	S	6.00	11+117		
Kiflian Wala Distributary	S	F	S	13.00	13+715		
	F	F	S	5.00	8+600		
Garja Distributary	F	F	S	6.00	7+955		
	F	F	S	40.00	63+043		
Bhoja Distributary	F	F	S	16.00	25+682		
	F	NA	F	4.00	10+500		
Kabir Wala Distributary	F	NA	F	13.00	21+080		
				51.00	54+000		
				6.00	11+989		
				22.75	29+700		
				5.30	8+000		
				6.00	9+000		
				3.70	10+700		
Total Length						641.739 (ft.)	
						128.35 (canal mile)	

Table A.2.1-4 (23/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(10) LOWER GUGERA CANAL DIVISION (LCC-6/7)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/ Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Pauliani Distributary	F	F	S	R	10.00	10+035	
				L	14.00	18+000	
Awagat Distributary	F	F	S	L	4.25	11+266	
Lower Gugera Branch	S	S	S	L	27.00	24+865	
Khanuana Distributary	F	F	S	L	7.00	6+242	
Bhartiana Distributary	F	F	S	L	12.00	16+550	
	S	F	F	L	5.40	6+250	
Satiana Distributary	S	F	F	L	17.00	16+520	
Lower Gugera Branch	S	S	S	L	8.00	14+378	
Russian Distributary	S	F	S	L	11.00	2+477	
	S	S	S	L	4.31	15+652	
Lower Gugera Branch	S	S	S	L	6.50	5+270	
Bhail Distributary	S	F	S	R	5.00	8+824	
Turkhani Distributary	S	F	S	R	10.00	26+760	
Jam Wala Distributary	S	F	S	R	31.50	33+600	
	S	F	S	R	16.00	18+870	
Mungi Distributary	S	F	S	R	16.00	25+000	
Yakkar Distributary	S	F	S	R	17.00	5+029	
	S	F	S	R	7.00	14+160	
Pir Mahal Distributary	S	F	S	R	7.00	10+290	
	S	F	S	R	8.00	15+915	
Khirki Distributary	S	S	S	R	13.00	32+430	
	S	S	S	R	34.00	52+470	
Khirki Distributary	S	S	S	R	6.00	12+276	
	S	S	S	L	14.40	23+292	
Khirki Distributary	S	S	S	R	18.40	31+433	
	S	S	S	R	54.00	50+722	
Khirki Distributary	S	S	S	L	7.00	2+900	
	S	S	S	L	15.50	26+900	
Khirki Distributary	S	S	S	L	17.00	40+600	
	S	S	S	L	4.00	4+454	
Khirki Distributary	S	S	S	L	5.00	4+155	
	S	S	S	L	8.50	34+272	
Total Length						621.857 (ft.)	
						124.37 (canal mile)	

Table A.2.1-4 (24/26) GROUND WATER QUALITY
BASE DATA OF MINORS

(11) UPPER GUGERA CANAL DIVISION (LCC-7/7)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Jurnian Distributary	F	F	F	R	6.00	21+000	
				R	6.00	9+030	
Gajiana Distributary	S	NA	F	R	9.00	11+739	
	S	F	F	R	10.00	9+310	
Manan Wala Distributary				R	6.00	10+200	
				R	78.00	84+300	
Lagar Distributary				R	7.00	7+900	
	S	NA	F	L	9.00	11+309	
Kabbar Wala Distributary	S	NA	S	L	9.00	8+070	
	S	F	F	R	54.00	71+882	
Shark Pur Distributary				L	42.00	53+856	
				L	5.00	11+658	
High Level Channel				L	11.00	18+125	
	S	NA	F	L	10.00	16+250	
Nabra Distributary				R	4.00	4+918	
				R	5.00	5+284	
Dangali Distributary				L	5.00	2+300	
	F	F	F	L	3.40	7+080	
Jalalana Distributary	S	NA	F	L	5.00	8+487	
	F	NA	S	L	5.00	61+970	
Mallan Distributary	S	NA	F	L	5.00	11+347	
				L	8.00	9+432	
Khurrian Wala Distributary				R	25.00	58+510	
	S	F	S	L	2.00	16+054	
Shahkot Distributary				L	25.00	6+765	
	F	F	S	L	27.00	34+930	
				L	11.00	28+415	
				R	6.00	9+650	
				L	7.00	9+900	
				L	6.00	11+000	
				L	6.00	7+700	
Total Length						638.371	(ft.)
						127.67	(canal mile)

Table A.2.1-4 (25/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(12.1) LAHORE CANAL DIVISION (CBDC-1/2)

(1) Head Channel	(2) Quality of Groundwater			(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)	JICA (1996)					
B.R.B. Link	F	F	F	1. Rai Right (Direct) 2. Rai Left (Direct)	R	5.04	10+250	
Kaura Distributary	F	NA	F	3. Cantonment	L	16.00	17+484	
Government House Distributary	F	F	F	4. Garden	R	7.00	8+000	
Niaz Beg Distributary	F	S	S	5. Ram Kot	L	17.00	4+435	
				6. Kamro Gil	R	7.40	6+500	
				7. Jalke	L	10.00	15+988	
				8. Thari Utar	L	20.00	14+400	
				9. Rode	Front	6.50	9+667	
Khaira Distributary	S	F	S	10. Upper Gohawa	R	18.90	20+000	
				11. Lower Gohawa	R	8.50	12+148	
				12. Harpalke	R	18.50	24+063	
				13. Balar	L	5.50	19+490	
				14. Lil	L	5.50	16+185	
				15. Dulu	R	4.50	2+871	
				16. Pindi	L	2.30	6+927	
B.R.B.D. Link	F	F	F	17. New Minor	R	21.00	6+993	
				18. Karbat (Right)	R	7.70	7+220	
				19. Karbat (Left)	R	15.60	5+150	
Buchar Kahna Distributary	F	NA	S	20. Lower Buchar	L	9.04	2+620	
				21. Lakhoke Sub-Minor	L	24.00	25+000	
				22. Ghanakkar	L	4.40	10+000	
				23. Julke	R	30.50	29+500	
				24. Baddoki	L	9.00	8+500	
				25. Kacha	L	8.50	34+000	
				26. Kingra	R	6.21	9+000	
				27. Jhedu	L	15.90	46+090	
				28. Minor-1	L	6.00	4+013	
				29. Minor-2	L	5.45	9+592	
				30. Minor-3	L	3.00	5+030	
Ghawind Distributary	F	NA	F	31. Jaman	L	16+000	10+015	
Ditch Distributary	F	NA	F	32. Vangil	R	18+575	16+000	
Raiwind Distributary	F	NA	F	33. Jhedu Dir	L	59+090	5+907	
				34. Babaliana	R	6+018	18+575	
Thamman Distributary	S	S	S	35. Kasur	L	16.00	6+018	
				36. Labneke Sub-Minor	R	98.00	59+090	
				37. Kasur Sub-Minor	L	30.00	20+535	
				38. Achil Pur	L	23+763	7+590	
				39. Athil Pur Sub-Minor	L	5+530	74+243	
				40. Sabran	L		35+590	
Sirhali Distributary	F	S	F	41. Sirhali	L		23+763	

Table A.2.1-4 (26/26) GROUND WATER QUALITY
BASE DATA OF MINORS
(12.2) LAHORE CANAL DIVISION (CBDC-2/2)

(1) Head Channel	(2) Quality of Groundwater		(3) Minor	(4) Left/Right (L/R)	(5) Head Discharge (cusecs)	(6) Tail R.D. (ft.)	(7) Remarks
	WAPDA (1971)	MOA (1980-90)					
Lulliani Distributary	F	NA	S	L	14.50	22+000	
			S	L		24+000	
Chhina Distributary	S	F	S	L	19.00	25+623	
Zafarke Distributary	S	F	S	L	10.30	18+150	
Main Branch Lower	S	F	S	R	10.05	25+425	
Turkwind Distributary	S	S	S	L	17.00	25+425	
			S	L	6.00	6+683	
			S	L	10.50	15+630	
Handal Distributary	S	F	F	R	4.00	2+237	
			S	L	7.50	9+250	
Rakh Distributary	F	NA	S	L	21.00	25+000	
			S	L	19.00	24+465	
			S	L	8.00	19+025	
			S	R	6.20	5+223	
			S	L	11.50	11+800	
Maujoke Distributary	S	NA	S	R	15.00	18+800	
			S	R	9.50	9+825	
Vahn Distributary	S	F	S	L	71.00	39+100	
			S	L	9.00	13+819	
			S	L	8.00	5+685	
			S	L	14.00	18+650	
			S	R	25.00	23+350	
			S	R	15.00	13+190	
			S	R	8.00	8+015	
			S	L	6.00	8+929	
B.R.B.D.Link	F	F	F	R	5.00	7+587	
			S	L	3.00	6+000	
Total Length					1,106.858	(ft.)	
Total Length					221.37	(canal mile)	

FIGURES

Fig. A.1.3-1 Frequency Distribution of Seepage Rate of Unlined Distributaries and Minors

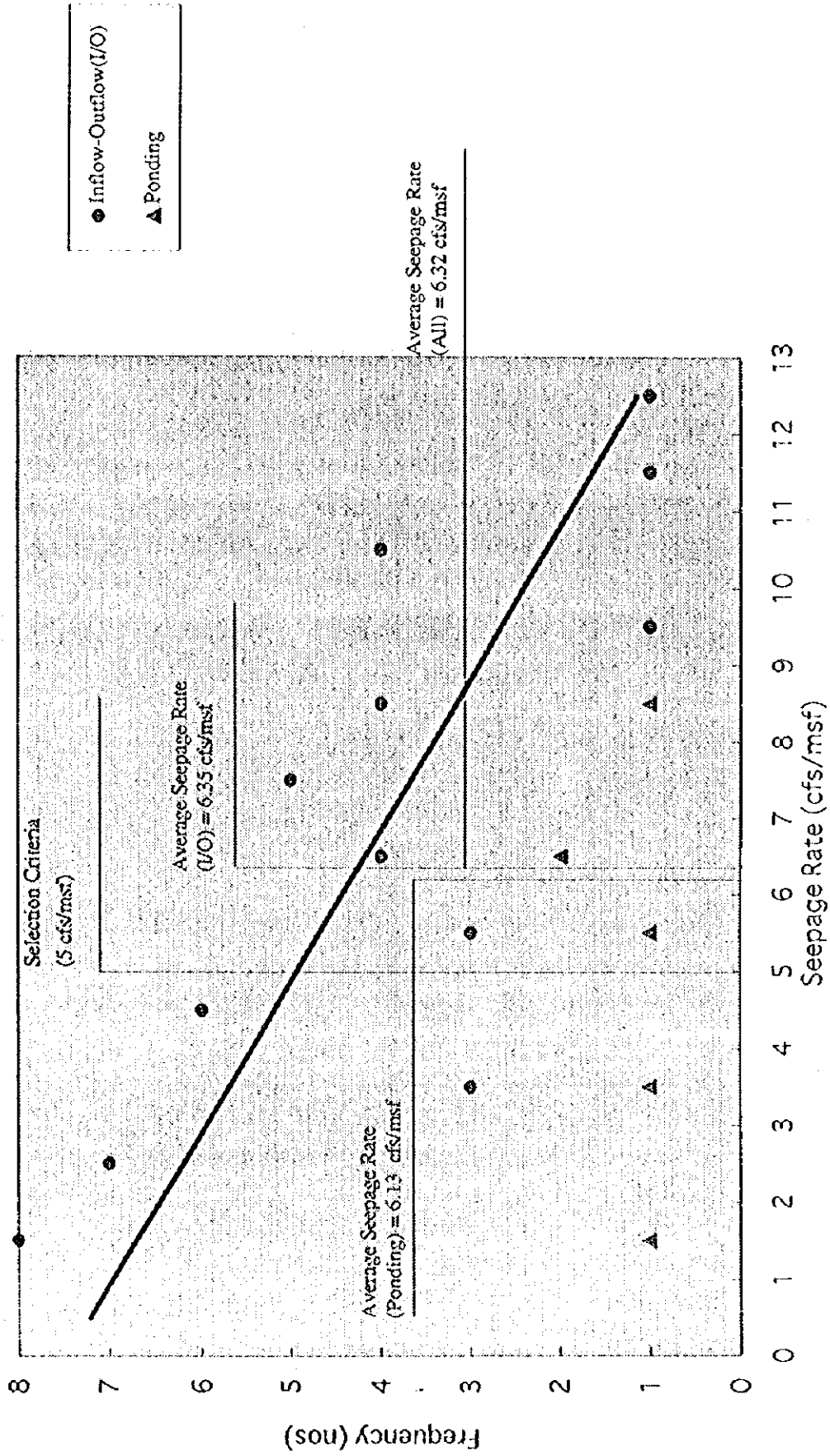


Fig. A.1.4-1 Inequity of Water Distribution

