ANNEXURE A

RAINFALL DATA IN THE KIM RIVER BASIN

Weather Station	RAINFALL (mm)											
YEAR	Pingut	Baldeva	Zanhkav	Kim	Kosamba	Hansot	Olpad	Valia	Mangrol	Tadkeshwar	Uteva	Velachha
1983	1450	1360	0	1297	0	1286	1266	1471	1911	885	1541	1376
1984	1330	1290	0	1429	0	823	711	768	541	851	1345	688
1985	1342	1306	0	780	0	532	508	643	927	844	603	681
1986	1230	1356	0	704	557	1297	705	659	688	351	1215	759
1987	976	815	623	384	273	1429	409	256	486	1088	437	430
1988	1273	1388	1229	1718	1162	780	1587	1066	1873	1472	1976	1362
1989	1289	1290	1340	957	825	704	594	490	952	806	926	671
1990	1357	1296	1342	868	675	384	632	562	768	817	812	715
1991	1273	1384	1464	459	541	1718	498	319	779	1629	599	538
1992	1386	1332	1327	941	804	957	1138	803	2360	1834	1654	1324
1993	1479	1289	1286	709	1080	868	1164	631	1468	2600	1363	1112
1994	1340	1386	808	1253	2013	459	1511	1103	1851	1069	2135	1783
1995	1287	1275	1340	488	607	941	701	1521	711	832	1023	775
1996	1342	1380	1911	623	703	709	684	721	747	820	1473	694
1997	1401	1356	941	514	700	1253	694	596	1049	1152	1282	808
1998	1257	1268	927	740	787	488	357	959	1306	597	1229	1340
1999	1396	1544	688	592	741	623	628	479	1066	675	827	595
2000	1298	1076	482	641	745	514	528	494	338	933	0	885
2001	1260	1465	1300	977	904	740	703	863	1106	685	0	1199
2002	1389	1305	965	922	1042	592	871	741	764	1185	763	1039
2003	1682	1846	1766	1437	1554	641	1135	1288	1724	1263	1594	524
2004	1278	1585	1002	1074	1392	977	1273	1048	1238	1198	1689	1034
2005	995	1260	1734	1426	1588	922	1429	1359	1584	1056	1773	823
2006	1439	1637	2176	1495	1689	1437	1303	1024		1459	1796	1824
2007	1574	1489	1425	1225	0	1074	1468	1175	1464	890	1392	1539
2008	1460	1438	1134	1171	1366	1426	1333	758	1327	0	1273	1804
2009	811	1247	1357	1089	1308	1495	1036	499	981	0	1259	2090
2010	895	1024	1296	1374	755	8	1493	1209	991	0	0	0
2011	956	1100	1471	768	459	1171	947	0	0	1176	648	1459
2012	768	896	988	0	0	1089	989	756	0	1100	1518	1136
2013	1758	1560	1345	622	626		1136	1595	1208	876	763	1342

**Source: State Water Data Centre, Gandhinagar*

ANNEXURE B

AREA UNDER CULTIVATION OF DIFFERENT CROP TYPES IN THE KIM RIVER BASIN BY URBC + KRBC (1998-2013)

Season	TYPE AND AREA OF CROP IRRIGATED (Km2)									
1998										
	Sugarcane	**Paddy**	**Groundnut**	**Cotton**	**Vegetables**	**Wheat**	**Jowar**	**Others**	**Plaintains**	**Other Perrenials**
Hot	58.25	3.13	2.38	0	1.19	0	0.48	4.82	0.14	0.16
	47.02	6.64	0.08	0	0.17	0	0.46	7.12	0	0.03
	50.81	1.12	0.01	0	1.19	0	0.71	9.08	0.15	1.56
	156.08	10.89	2.47	0	2.55	0	1.65	21.02	0.29	1.75
Kharif	53.93	9.15	0	0.01	0.42	0	6.57	2.05	0.4	0.05
	52.61	14.29	0	0.04	0.47	0	0.43	6.14	0.01	0.03
	48.07	24.42	0	1.81	1.3	0	0.15	17.59	0.13	1.37
	154.61	47.86	0	1.86	2.19	0	7.15	25.78	0.54	1.45
Rabi	69.62	1.71	2.64	0.02	0.95	0	0.94	5.91	0.35	0.28
	60.96	3.36	0.08	0.08	0.43	0.44	1.38	14.03	0.01	0.08
	67.78	0.54	0.05	2.69	2.22	0.85	6.53	15	0.2	1.59
	198.36	5.61	2.77	2.79	3.6	1.29	8.85	34.94	0.56	1.95
2003										
Hot	52.98	3.14	2.91	0	0.9	0	0	5.21	0.02	2.5
	39.17	8.64	0.02	0	0.66	0	0.02	12.52	0	0.07
	39.85	0.92	0.02	0	1.2	0	2.5	7.66	3.2	1.38
	132	12.7	2.95	0	2.76	0	2.52	25.39	3.22	3.95
Kharif	55.34	9.68	0	0.08	0.35	0	0.61	0	0.27	0.14
	44.58	19.72	0	1.09	0.31	0	0.42	0	0.02	0.04
	42.14	29.12	0	0.99	0.9	0	0.04	0	0.44	0.88
	142.06	58.52	0	2.16	1.56	0	1.07	0	0.73	1.06
Rabi	60.46	4.41	4.96	0.11	1.09	1.93	0	10.5	0.28	0.27
	46.51	11.34	0.24	1.46	1.03	2.76	0	16.61	0.04	0.04
	55.04	4.15	0	1.35	2.55	9.1	0.82	22	0.29	0.29
	162.01	19.9	5.2	2.92	4.67	13.79	0.82	49.11	0.61	0.6

ANNEXURE B

AREA UNDER CULTIVATION OF DIFFERENT CROP TYPES IN THE KIM RIVER BASIN BY URBC + KRBC (1998-2013)

2008										
	Sugarcane	**Paddy**	**Groundnut**	**Cotton**	**Vegetables**	**Wheat**	**Jowar**	**Others**	**Plaintains**	**Other Perrenials**
Hot	62.1	5.57	2.05	0	2.44	0	0	5.67	0.09	0.43
	40.29	7.8	0.02	0	1.3	0	0	15.19	0.03	0.05
	43.38	3.91	0.03	0	3.98	0	0.65	19.87	0.05	0.95
	145.77	17.28	2.1	0	7.72	0	0.65	40.73	0.17	1.43
Kharif	57.62	9.01	0.00	0.01	1.67	0.00	0.00	14.88	0.09	0.16
	49.50	13.80	0.00	0.02	0.46	0.00	0.00	12.84	0.03	0.09
	51.66	27.44	0.00	1.22	2.21	0.00	0.09	15.91	0.06	0.99
	158.78	50.25	0.00	1.25	4.34	0.00	0.09	43.63	0.18	1.24
Rabi	67.82	3.14	0.56	0	0.67	0.74	0.01	13.2	0.17	0.3
	52.14	4.45	0	0.26	0.2	0.72	0	20.38	0.02	0.03
	67.25	1.56	0	2	2.84	4.74	0.37	19.34	0.02	0.88
	187.21	9.15	0.56	2.26	3.71	6.2	0.38	52.92	0.21	1.21
2013										
Hot	65	4.25	0.39	0	2.8	0	1.31	11.38	0.02	0.35
	42.23	8.46	0	0.05	0.81	0	0	10.97	0	0.1
	43.37	6.78	0	0	2.17	0	0	17.55	0.02	1.29
	150.6	19.49	0.39	0.05	5.78	0	1.31	39.9	0.04	1.74
Kharif	65.54	3.13	0	0	0.12	0	0.14	3.91	0.02	0.06
	50	8.71	0	0.03	0.54	0	0	3.96	0	0.03
	51.16	17.92	0	0.58	1.52	0	0	4.01	0.02	0.81
	166.7	29.76	0	0.61	2.18	0	0.14	11.88	0.04	0.9
Rabi	54.92	3.06	0.22	0	1.22	0.46	0.08	7.04	0.02	0.44
	43.96	6.37	0	0.05	0.64	0	0.1	4.06	0	0.09
	51.05	4.64	0	0.04	1.97	0.19	1.66	6.41	0.02	1.03
	149.93	14.07	0.22	0.09	3.83	0.65	1.84	17.51	0.04	1.56

ANNEXURE D

SEASONAL WATER LEVEL RECORDS OF THE KIM RIVER BASIN (2012-2013)

Sample No.	Village	Co-ordinates	2012 (metres)			2013(metres)		
			Winter	Pre- monsoon	Post-monsoon	Winter	Pre- monsoon	Post-monsoon
WS-01	Tadphalia	N21 37.381 E73 23.751	3.1	7.3	1.1	6.1	6.7	0.4
WS-02	Arethi	N21 33.682 E73 23.761	7.1	DRY WELL	4.7	7.6	DRY WELL	4.5
WS-03	Pingut	N21 32.869 E73 22.591	6.3	8.8	4.8	7.9	9.7	2.3
WS-04	Maujha	N21 24.610 E73 07.754	3.4	2.9	3.3	4.6	4.3	3.7
WS-05	Sagva	N21 26.158 E73 10.945	12.1	DRY WELL	5.2	10.9	12.3	4.6
WS-06	Atkhol	N21 24.358 E73 13.129	8.1	DRY WELL	5.1	9.3	7.9	3.2
WS-07	Dungri	N21 25.444 E73 15.302	6.8	9.9	4.6	10.6	12.0	1.9
WS-08	Chandaniya	N21 30.787 E73 21.822	3.1	7.3	2.7	3.9	7.1	1.6
WS-09	Amkhuta	N21 35.297 E73 21.413	3.4	6.3	1.9	4.3	5.8	1.1
WS-10	Jharni	N21 26.241 E73 13.509	4.1	6.6	1.4	4.4	5.6	0.9
WS-11	Selarpur	N21 27.330 E73 15.296	4.9	DRY WELL	3.1	5.7	DRY WELL	2.2
WS-12	Wadiphalia	N21 32.860 E73 10.553	0.9	DRY WELL	0.0	0.9	DRY WELL	0.0
WS-13	Nasarpor	N21 25.229 E73 04.772	9.3	13.9	2.5	10.0	12.5	2.4
WS-14	Kavechiya	N21 27.416 E73 05.091	3.7	5.8	2.7	5.3	DRY WELL	2.2
WS-15	Chaswad	N21 26.325 E73 02.687	8.8	10.3	8.1	12.4	13.0	2.6
WS-16	Kelvikuva	N21 28.928 E73 00.788	7.0	DRY WELL	6.9	12.2	DRY WELL	3.9
WS-17	Kamaliya	N21 31.214 E73 03.225	6.9	10.5	5.5	7.8	DRY WELL	2.6
WS-18	Kabirgam	N21 27.198 E72 56.930	13.5	DRY WELL	15.0	DRY WELL	DRY WELL	4.4
WS-19	Gundiya	N21 25.271 E72 59.350	9.6	DRY WELL	7.3	10.1	DRY WELL	4.9
WS-20	Rundha	N21 23.777 E73 01.159	12.5	DRY WELL	5.2	10.7	DRY WELL	3.0
WS-21	Kadrali	N21 21.817 E73 03.978	8.6	11.1	DRY WELL	DRY WELL	DRY WELL	2.2
WS-22	Holakotar	N21 21.518 E72 57.752	11.7	12.7	10.5	11.5	DRY WELL	8.2
WS-23	Wankal	N21 23.618 E72 52.226	6.6	14.0	10.4	15.5	13.6	2.6
WS-24	Pataldevi	N21 22.790 E72 51.348	9.5	13.5	7.3	11.9	13.5	4.9
WS-25	Lavet	N21 25.774 E72 50.425	9.7	DRY WELL	7.2	DRY WELL	DRY WELL	2.5
WS-26	Deshad	N21 25.462 E72 46.122	7.7	6.9	4.6	6.4	7.0	2.4
WS-27	Khareda	N21 24.936 E72 40.878	9.4	DRY WELL	8.3	12.7	DRY WELL	2.6
WS-28	Naogama	N21 28.107 E72 40.653	1.3	1.1	1.4	1.7	1.5	1.8
WS-29	Simodra	N21 37.381 E73 23.751	4.0	3.0	2.4	4.4	9.5	1.6
WS-30	Limbada	N21 33.682 E73 23.761	4.4	5.4	4.0	4.0	6.0	4.0
WS-31	Nandav	N21 32.869 E73 22.591	4.7	6.6	3.3	3.9	5.3	1.8
WS-32	Dinod	N21 24.610 E73 07.754	3.1	7.0	2.3	3.9	7.5	1.1
WS-33	Kosamba	N21 26.158 E73 10.945	3.9	4.6	3.9	5.2	6.0	2.1
WS-34	Hathoda	N21 24.358 E73 13.129	3.3	3.8	2.2	2.8	3.6	0.6
WS-35	Warethi	N21 25.444 E73 15.302	3.7	3.8	2.9	3.5	3.7	2.6
WS-36	Tadkeshwar	N21 30.787 E73 21.822	4.5	4.6	1.4	3.3	4.1	0.7
WS-37	Pipodra	N21 35.297 E73 21.413	14.8	10.0	4.4	6.6	14.0	7.0
WS-38	Simalthu	N21 26.241 E73 13.509	1.9	3.0	1.6	1.9	2.8	1.1
WS-39	Kachhab	N21 27.330 E73 15.296	2.2	3.1	1.9	1.9	3.3	0.9
WS-40	Vadoli	N21 32.860 E73 10.553	1.8	2.0	1.8	1.2	2.0	1.3
WS-41	Koba	N21 25.229 E73 04.772	1.8	2.0	2.0	2.3	2.8	1.6
WS-42	Karanj	N21 27.416 E73 05.091	5.0	3.8	3.8	5.2	6.6	4.0
WS-43	Kantiajal	N21 26.325 E73 02.687	4.5	4.9	No sample	4.8	5.5	1.4

ANNEXURE E

SECULAR WATER LEVEL RECORDS OF THE KIM RIVER BASIN

Village		Static Water Level (metres)							
		1998		2003		2008		2013	
	Well No.	Pre-monsoon	Post-monsoon	Pre-monsoon	Post-monsoon	Pre-monsoon	Post-monsoon	Pre-monsoon	Post-monsoon
Amod	310 B	0.9	0.7	8.7	4.4	5.2	0.3	1.4	0.7
Anklava	301	1.1	0.4	1.1	0.8	1.3	1.0	2.8	1.7
Asarma	319	1.1	2.2	5.2	1.9	4.4	3.3	7.0	7.0
Bolav	317	1.2	3.2	6.5	5.9	8.3	4.3	8.0	4.2
Hathoda	226	1.3	1.0	1.5	1.1	2.1	1.0	1.3	1.4
Ilav	336	2.0	0.9	2.4	0.5	2.1	1.3	2.5	2.3
Kanthawada	263	2.1	1.1	1.4	1.3	1.8	0.9	1.9	1.7
Kantiajal	368	2.1	3.8	4.1	3.4	4.4	4.6	5.5	4.9
Kantva	329	2.2	0.8	2.8	1.6	2.0	1.5	2.5	1.8
Kharach	247	2.7	1.8	3.1	2.6	2.5	2.1	2.6	2.8
Kosamba	362	2.9	2.7	5.7	3.5	4.5	3.4	5.0	3.2
Limbada	401 A	3.2	3.2	2.8	2.2	4.0	1.2	4.4	3.8
Naogama	237	3.9	2.4	5.9	2.3	3.5	3.3	7.4	7.3
Obha	380	4.3	3.1	6.5	3.2	4.8	2.8	3.5	3.3
Panjorli	347	5.3	1.5	2.4	2.0	1.9	2.8	4.0	6.7
Sahol	353	5.6	2.0	2.9	2.1	0.2	1.7	2.4	1.9
Shethi	252	7.5	1.4	1.3	1.2	1.8	1.0	2.5	1.8
Simodra	332	9.3	0.8	1.6	0.7	7.4	3.4	2.0	1.1
Tadkeshwar	323	4.0	2.3	4.1	2.0	3.9	2.3	4.8	4.3
Velachha	394	4.0	3.6	4.0	2.9	4.0	3.2	6.9	6.7
Amod	310 B	0.9	0.7	8.7	4.4	5.2	0.3	1.4	0.7
Achharan	139	5.9	2.1	3.6	4.0	3.4	1.3	3.4	2.6
Andhi	85	2.4	2.4	3.1	1.4	2.3	1.8	3.3	1.7
Anita	28B	0.6	0.8	1.9	1.3	1.7	0.9	4.2	0.8
Anita	28A	3.2	1.8	2.6	1.7	0.9	0.4	0.6	0.5
Asanad	58	4.0	3.2	3.9	2.5	3.1	2.6	5.0	2.5
Atodara	138	2.8	1.9	4.5	2.2	2.1	2.1	4.7	1.6
Bhadol	25	2.0	1.7	3.6	1.8	1.5	2.0	3.8	3.0
Bhatgam	83	1.3	1.3	1.6	0.6	1.4	0.6	1.7	0.5
Bolav	30	6.9	4.5	8.7	3.9	5.4	3.3	10.0	8.3
Erathan	88A	1.7	1.9	2.8	1.4	2.4	1.6	3.3	1.2
Gola	86	1.9	1.4	2.7	1.7	1.8	1.6	2.4	0.8
Hathisa	133	0.9	0.8	2.4	0.8	1.4	1.0	3.0	1.4
Kachhab	65	2.4	2.2	2.4	1.8	2.2	1.9	2.0	1.6

ANNEXURE E

SECULAR WATER LEVEL RECORDS OF THE KIM RIVER BASIN

Kadrama	42	1.5	1.4	2.6	1.1	2.3	1.4	4.2	0.7
Kanyasi	122A	1.5	1.5	0.8	1.2	0.6	1.6	2.6	1.4
Karanj	126	3.0	2.0	2.6	1.9	3.0	2.9	WB	WB
Kasad	22A	1.6	1.5	2.9	1.3	2.7	1.1	3.3	1.2
Kathodra	50B	10.5	7.5	9.9	7.3	7.2	8.3	9.0	7.5
Khalipor	141	2.5	2.2	3.3	2.5	2.6	2.3	2.7	1.9
Kimamli	31	4.5	3.6	6.0	2.6	5.4	2.6	6.0	1.9
Kudsad	146	1.2	1.5	0.7	0.9	2.2	0.1	0.8	1.7
Limodara	177	0.8	0.7	0.8	0.8	0.6	0.5	0.6	0.7
Madhar	168	1.6	1.4	2.1	1.2	2.5	1.3	2.2	1.1
Molavan	74	3.4	3.0	3.1	2.4	2.2	2.3	3.1	2.4
Mota Borasara	70A	10.9	8.7	11.0	8.9	7.1	7.9	12.5	12.5
Mulad	69	1.3	1.7	2.5	1.3	3.0	1.7	4.3	0.8
Naroli	56	2.8	1.3	3.7	2.3	3.1	2.5	4.1	2.5
Navi Paradi	173A	2.7	2.3	3.7	2.9	3.6	3.1	3.9	WB
Obhala	117B	1.3	0.9	1.8	1.3	0.5	1.3	1.3	0.8
Olpad	161A	3.0	3.7	2.1	1.4	1.7	1.2	1.4	1.0
Pardi Bhadol	64	1.5	1.1	2.7	1.3	1.6	2.6	WB	WB
Pipodara	148	1.9	1.3	1.6	1.2	1.7	1.4	2.0	1.7
Sandhier	140	7.3	2.4	5.9	2.5	5.5	2.3	3.1	2.3
Saras	157	2.6	1.4	2.8	1.6	2.2	1.5	2.1	1.3
Sarsana	59	2.7	2.7	3.0	2.5	2.7	2.3	2.8	2.5
Simalthu	67	1.3	0.8	2.8	2.5	3.2	2.2	3.6	2.0
Sinthan	115B	1.6	2.0	2.3	1.9	2.8	2.1	3.3	1.2
Sivan	169	2.5	1.7	3.7	2.0	2.0	0.3	0.7	0.2
Sondiakhara	81	1.6	1.4	2.3	1.3	2.4	0.7	1.8	0.7
Syadala	118B	0.7	0.7	0.5	1.1	0.3	0.6	1.0	1.0
Takarma	60	0.1	0.1	1.0	0.2	1.1	0.1	2.3	0.2
Vadoli	27	2.9	1.2	3.2	1.2	2.2	1.6	WB	WB
Vihara	89	1.8	1.9	2.8	1.5	1.9	1.7	3.1	1.4
Warethi	76	4.0	2.5	4.4	2.7	3.8	2.9	3.7	2.6

**Source: Soil Survey Division, Surat Irrigation Circle*