RAINFALL DATA

Station: Addis Ababa Observatory
Element: Rainfall (mm)
Location:
9°00" N Latitude ;38°45" E Longitude **Altitude:- 2408 m**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1962	0.0	0.0	138.8	32.3	11.9	50.8	226.7	224.6	216.2	12.5	14.2	9.4	**937.4**
1963	11.0	32.3	17.6	142.3	116.9	110.7	196.2	250.8	116.1	0.0	17.9	18.1	**1029.9**
1964	0.0	0.0	121.1	68.0	118.7	198.4	270.0	123.6	202.1	81.5	1.4	50.2	**1235.0**
1965	9.6	6.3	38.4	53.3	9.2	61.6	275.2	277.7	116.0	113.4	4.9	0.0	**965.6**
1966	26.4	70.1	81.2	83.8	3.8	137.5	311.4	329.7	150.0	57.0	3.2	0.0	**1254.1**
1967	0.0	5.0	81.3	93.1	113.5	94.9	190.1	293.8	232.8	36.1	60.4	0.0	**1201.0**
1968	12.0	138.8	35.4	229.5	32.9	140.1	205.7	228.8	181.0	4.8	0.0	0.0	**1209.0**
1969	43.3	86.9	96.0	109.6	116.7	146.1	232.6	311.5	161.4	1.0	4.0	0.0	**1309.1**
1970	42.9	60.2	231.5	41.3	17.8	85.8	302.9	424.7	214.1	0.4	0.0	0.0	**1421.6**
1971	23.8	0.0	15.1	69.6	200.7	131.9	240.5	340.4	126.6	7.6	10.6	14.1	**1180.9**
1972	20.8	71.6	43.2	180.2	39.5	123.9	230.1	137.3	115.3	0.0	16.0	0.4	**978.3**
1973	0.3	1.6	2.2	33.6	138.8	107.0	267.7	345.5	269.8	50.3	0.0	52.5	**1269.3**
1974	0.0	31.9	21.7	8.9	114.2	135.5	264.9	330.8	229.2	3.5	0.0	0.0	**1140.6**
1975	0.0	2.7	24.4	60.3	53.5	123.5	271.5	183.6	181.3	17.0	0.0	0.0	**917.8**
1976	19.3	61.4	44.0	94.8	113.9	108.7	181.2	277.7	145.5	3.0	62.3	13.2	**1125.0**
1977	55.7	40.0	68.0	65.9	146.0	154.6	255.3	278.8	133.6	272.5	1.2	0.0	**1471.6**
1978	2.1	63.3	30.8	80.3	30.8	116.7	208.1	361.3	111.0	39.1	0.0	3.4	**1046.9**
1979	75.7	19.1	73.6	84.9	103.2	144.7	316.1	204.5	225.1	0.0	0.0	16.2	**1263.1**
1980	23.2	36.6	45.3	88.5	54.2	162.2	385.1	297.4	111.9	51.5	0.0	0.0	**1255.9**
1981	0.0	75.5	176.0	82.9	3.9	50.1	266.5	320.9	182.1	13.3	0.0	5.2	**1176.4**
1982	48.7	80.9	57.8	103.7	115.9	31.9	259.3	257.9	135.8	64.4	43.2	12.8	**1212.3**
1983	18.3	21.7	48.7	117.0	257.0	109.3	199.3	244.7	161.6	26.3	0.1	8.8	**1212.8**
1984	0.0	8.0	8.7	8.4	127.8	220.8	296.1	295.6	142.4	0.0	4.4	16.3	**1128.5**
1985	14.2	0.0	17.5	96.3	83.7	112.2	270.4	327.7	205.9	58.0	3.3	1.2	**1190.4**

Station: Addis Ababa Observatory Element: Rainfall (mm)
Location: 9°00" N Latitude; 38°45" E Longitude Altitude:- 2408 m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1987	0.5	53.5	236.5	98.9	217.0	99.7	197.5	170.3	114.9	21.8	0.8	0.3	**1211.7**
1988	9.7	53.4	5.3	144.6	16.6	106.2	277.9	299.3	229.7	59.9	0.0	0.0	**1202.6**
1989	0.8	75.9	76.5	153.6	0.5	120.9	357.2	325.3	188.7	14.5	0.0	7.6	**1321.5**
1990	0.8	155.9	59.2	106.4	20.0	88.8	218.7	268.6	184.0	16.2	6.0	0.0	**1124.6**
1991	0.0	74.5	106.6	34.7	55.3	191.1	248.9	262.6	126.4	3.4	0.0	50.0	**1153.5**
1992	20.2	33.7	20.2	41.0	52.0	109.1	248.5	294.7	209.4	69.7	0.0	2.9	**1101.4**
1993	10.8	67.2	16.1	157.9	97.2	208.3	274.0	426.5	243.3	62.1	0.0	4.5	**1567.9**
1994	0.0	0.0	82.4	82.6	63.3	123.4	308.9	225.0	141.3	0.5	14.7	0.0	**1042.1**
1995	0.0	69.0	41.5	174.4	68.2	102.9	190.2	314.9	136.1	0.0	0.0	48.4	**1145.6**
1996	28.1	5.2	106.8	128.2	122.0	258.5	266.4	338.7	294.2	0.2	0.2	0.0	**1548.5**
1997	39.2	0.0	24.5	51.3	38.5	104.0	272.6	194.3	113.8	62.4	50.3	1.5	**952.4**
1998	55.2	20.5	43.0	48.5	154.2	124.4	258.4	260.0	213.6	116.9	0.0	0.0	**1294.7**
1999	2.9	0.3	28.8	16.3	23.8	119.6	268.6	305.3	88.4	55.4	0.0	0.0	**909.4**
2000	0.0	0.0	2.4	58.7	110.0	144.5	244.8	306.2	250.6	46.4	21.1	0.0	**1184.7**
2001	0.0	12.2	213.5	25.0	168.0	213.5	428.0	246.4	130.7	14.6	0.0	0.0	**1451.9**
2002	14.7	21.0	90.2	56.5	63.1	172.5	255.2	215.9	108.8	0.2	0.0	16.5	**1014.6**
2003	10.5	53.3	62.6	99.9	20.2	151.8	291.8	233.3	214.1	0.8	1.5	54.9	**1194.7**
2004	24.8	20.3	49.5	139.9	30.1	141.9	248.5	268.6	164.0	76.9	0.0	0.0	**1164.5**
Mean	**15.5**	**38.7**	**66.8**	**89.4**	**83.0**	**130.7**	**259.5**	**276.5**	**170.9**	**36.5**	**7.9**	**9.5**	**1185.0**
Max	**75.7**	**155.9**	**236.5**	**229.5**	**257.0**	**258.5**	**428.0**	**426.5**	**294.2**	**272.5**	**62.3**	**54.9**	**1567.9**
Min	**0.0**	**0.0**	**2.2**	**8.4**	**0.5**	**31.9**	**180.1**	**123.6**	**88.4**	**0.0**	**0.0**	**0.0**	**909.4**
R. Coeff	**0.2**	**0.4**	**0.7**	**0.9**	**0.8**	**1.3**	**2.6**	**2.8**	**1.7**	**0.4**	**0.1**	**0.1**	
Stdev	**18.9**	**37.6**	**58.7**	**51.9**	**62.1**	**46.7**	**51.7**	**64.5**	**51.1**	**48.8**	**16.1**	**16.3**	**156.9**
75%	**2.7**	**13.4**	**27.2**	**54.4**	**41.1**	**99.2**	**224.6**	**233.0**	**136.4**	**3.6**	**0.0**	**0.0**	**835.7**
85%	**0.0**	**0.0**	**5.9**	**35.7**	**18.7**	**82.3**	**205.9**	**209.6**	**117.9**	**0.0**	**0.0**	**0.0**	**676.0**

Station: Chancho Element: Rainfall (mm)
Location: 9°19" N Latitude; 38°45" E Longitude **Altitude:- 2500 m**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1972	36.3	20.5	64.3	33.1	62.0	103.6	264.4	191.5	89.3	40.5	32.3	31.7	**469.5**
1973	0.0	0.0	4.0	16.8	52.3	180.3	290.6	328.5	107.1	8.7	0.5	8.7	**997.5**
1974	0.0	19.8	91.3	9.5	78.2	143.9	186.8	216.0	88.6	9.8	0.0	4.2	**848.1**
1975	15.7	22.0	35.4	87.9	113.7	169.9	351.7	244.8	58.8	0.0	1.0	27.5	**1128.4**
1976	7.5	39.9	64.1	93.9	29.1	245.4	297.5	275.0	111.1	67.3	9.2	9.9	**1249.9**
1977	51.1	21.7	106.2	50.9	31.4	215.4	367.4	278.5	126.5	164.8	12.4	10.9	**1437.2**
1978	27.4	11.6	65.7	45.4	11.5	46.4	356.0	391.0	203.0	9.3	18.4	28.2	**1214.4**
1979	90.6	19.3	65.7	54.1	119.7	123.6	244.8	275.1	136.3	77.7	25.4	18.3	**1250.6**
1980	33.1	20.5	64.3	90.5	62.2	168.9	448.2	275.0	130.0	50.5	20.0	17.5	**1380.1**
1982	27.0	20.5	82.2	38.8	42.6	46.0	109.1	275.6	11.5	38.5	12.5	12.8	**717.1**
1983	27.0	10.0	64.2	30.9	39.5	50.0	131.0	744.0	97.0	38.0	7.5	10.9	**390.9**
1990	6.8	54.0	39.6	63.3	22.7	120.0	387.3	392.3	155.3	0.9	X	0.0	**1242.2**
1991	49.3	44.3	161.5	10.8	14.4	162.0	283.9	338.3	121.9	5.0	2.4	12.2	**1206.0**
1992	59.4	67.5	80.2	62.3	72.4	116.6	288.6	332.6	142.0	71.1	20.3	13.4	**1326.4**
1993	18.4	60.3	24.4	177.2	119.6	115.7	352.9	405.0	262.4	21.8	0.0	0.0	**1557.7**
1994	0.0	0.0	50.7	48.2	30.8	198.6	334.1	245.4	161.2	0.0	10.5	0.0	**1079.5**
1995	0.0	39.3	52.7	151.3	62.5	78.2	367.4	305.4	77.3	0.0	0.0	31.2	**1165.3**
1996	59.7	27.7	109.5	55.4	81.2	209.8	298.5	367.8	162.0	0.0	16.4	1.2	**1389.2**
1997	54.4	0.0	61.5	52.7	54.9	122.3	380.8	219.8	56.1	49.7	47.2	1.8	**1101.2**
1998	52.8	32.6	21.5	43.3	142.4	140.0	412.0	332.4	183.9	75.4	0.9	0.0	**1437.2**
1999	9.8	0.0	36.3	23.3	39.4	65.4	378.7	326.8	137.2	66.9	0.0	1.7	**1085.5**
2000	0.0	0.0	8.8	102.7	34.5	108.5	248.2	319.4	137.8	42.5	52.9	28.5	**1083.8**
Mean	**30.4**	**27.2**	**60.7**	**72.7**	**65.2**	**131.7**	**334.5**	**319.3**	**144.2**	**33.2**	**15.1**	**9.0**	**1243.2**
Max	**59.7**	**67.5**	**161.5**	**177.2**	**142.4**	**209.8**	**412.0**	**405.0**	**262.4**	**75.4**	**52.9**	**31.2**	**1557.7**
Min	**0.0**	**0.0**	**8.8**	**10.8**	**14.4**	**65.4**	**248.2**	**219.8**	**56.1**	**0.0**	**0.0**	**0.0**	**1079.5**
Stdev	**26.8**	**26.1**	**46.2**	**54.3**	**40.4**	**47.1**	**52.6**	**53.8**	**56.7**	**31.5**	**19.9**	**12.1**	**173.0**
R. Coeff	**0.3**	**0.3**	**0.6**	**0.7**	**0.6**	**1.3**	**3.2**	**3.1**	**1.4**	**0.3**	**0.1**	**0.1**	
75%	**12.3**	**9.5**	**29.5**	**36.1**	**37.9**	**100.0**	**299.0**	**283.0**	**105.9**	**12.0**	**1.7**	**0.9**	**927.8**
85%	**2.6**	**0.1**	**12.8**	**16.4**	**23.3**	**82.9**	**280.0**	**263.6**	**85.4**	**0.6**	**0.0**	**0.0**	**767.6**

Station:-Derba Element:-Rainfall (mm)
Location 29" N Latitude ; 38°38" E Longitude Altitude:-2350m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1974					165.0	108.4	284.4	171.2	128.7	3.1	0.0	0.0	
1975	0.5	31.9	25.0	76.3	38.3	135.7	268.5	198.8	164.2	3.4	0.0	0.0	**942.6**
1976	6.2	28.0	38.5	44.5	14.3	122.2	209.2	283.1	94.6	12.6	24.7	0.2	**878.1**
1977	6.8	48.9	70.8	19.9	62.6	115.6	262.0	198.5	143.9	183.8	24.3	2.9	**1140.0**
1978	0.0	10.9	30.6	22.1	28.3	113.9	330.1	294.8	138.3	26.8	27.1	14.3	**1037.2**
1979	52.3	14.0	26.7	26.5	132.9	153.7	203.9	215.8	215.2	27.0	0.0	52.5	**1120.5**
1980	7.0	8.0	50.2	95.0	18.3	80.5	224.3	285.6	32.3	0.0	0.0	0.0	**801.2**
1981	0.0	0.0	0.0	54.0	0.0	37.2	308.5	250.2	160.0	26.0	0.0	1.5	**837.4**
1982	12.4	41.7	57.6	90.6	156.9	72.6	209.0	346.8	41.2				
1983					150.2	38.3	217.8	379.5	172.2	36.1	0.0	0.0	
1984	0.0	0.0	0.0	0.0			238.0	211.1	203.8	0.0	0.0	13.7	
1985	0.0	0.0	43.1	116.7	36.5	174.9	466.8	428.3	107.1	0.0	0.0	0.0	**1373.4**
1986	0.0	19.6	78.2	99.7	78.4	154.0	317.8	228.4	196.2	5.7	0.0	14.0	**1192.0**
1987	0.0	88.0	290.5	48.0	275.2	71.4	513.3	786.5	425.7	0.0	0.0	0.0	**2498.6**
1989	45.5	65.6	48.6	98.7	12.0	202.9	434.0	400.1	234.6	11.0	0.0	153.9	**1706.9**
1990	0.0	122.9	88.7	56.9	62.5	173.5	371.3	565.4	248.3	2.9	0.0		
1991	41.2	98.7	87.8	7.0	55.8	290.6	248.8	509.2	124.0	4.6	14.0	6.1	**1487.8**
1992	74.1	17.7	83.8	49.0	90.8	105.1	357.2	367.2	266.0	97.8	33.3	52.6	**1594.6**
1993	0.0	76.4	16.6	240.8	1342.0	246.2	592.5	629.3	289.1	70.4	41.5	3.7	**3548.5**
1994	0.0	0.0	80.0	5.4	63.7	151.1	349.5	276.8	146.0	0.0	6.0	0.0	**1078.5**
1995	0.0	32.5	62.9	136.8	79.2	29.5	317.4	196.9	145.0	0.0		41.0	
1996	42.4	0.0	80.5	34.8	37.4	81.2	316.3	196.0	72.1	75.5	27.3	4.6	**968.1**
1997	0.0	0.0	27.0	100.0	262.0	175.7	387.8	142.3	43.3	60.3	0.0	6.5	**1204.9**
1998	17.8	25.7	36.2	29.7	99.5	128.2	228.9	243.7	78.8	64.8	16.3	0.0	**969.6**
2000	0.0	0.0	10.0	36.8	0.0	29.5	167.8	367.0	243.0	36.8	15.2	4.0	**910.1**
2001	2.2	14.2	105.8		141.2	27.1	348.5	169.0	76.8	2.0	5.8	13.5	
2002	43.0	6.7	52.1	25.3	19.0	92.5	213.1	269.3	140.8	0.0		38.6	
2003	12.0	66.2	165.8	77.5	0.0	109.6	279.8	351.3	121.8	0.0	2.0	11.0	**1197.0**
2004	20.8	21.6	22.7	74.6	15.0	133.5	262.7					3.0	
Mean	**14.2**	**31.1**	**62.2**	**64.1**	**122.8**	**119.8**	**307.9**	**320.1**	**159.0**	**27.8**	**9.5**	**16.2**	**1254.7**
Max	**74.1**	**122.9**	**290.5**	**240.8**	**1342.0**	**290.6**	**592.5**	**786.5**	**425.7**	**183.8**	**41.5**	**153.9**	**3548.5**
Min	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**27.1**	**167.8**	**142.3**	**32.3**	**0.0**	**0.0**	**0.0**	**801.2**
R. Coeff	**0.1**	**0.3**	**0.6**	**0.6**	**1.2**	**1.1**	**2.9**	**3.1**	**1.5**	**0.3**	**0.1**	**0.2**	
Stdev	**20.9**	**34.2**	**58.4**	**51.5**	**250.0**	**64.4**	**99.5**	**151.9**	**86.7**	**42.1**	**12.9**	**31.8**	**653.8**
75%	**0.1**	**8.0**	**22.8**	**29.3**	**0.0**	**76.3**	**240.8**	**217.6**	**100.6**	**0.0**	**0.8**	**0.0**	**696.4**
85%	**0.0**	**0.0**	**1.7**	**10.7**	**0.0**	**53.0**	**204.8**	**162.6**	**69.2**	**0.0**	**0.0**	**0.0**	**502.1**

Station:- **Intoto** **Element:-** **Rainfall (mm)**

Location **9°30" N Latitude; 38°24" E Longitude Altitude:-2900 m**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1985	14.2	0.0	17.5	96.3	83.7	112.2	270.4	327.7	205.9	58.0	3.3	1.2	**1190.4**
1986	0.0	35.7	88.0	197.6	125.4	179.5	180.1	264.2	127.8	36.1	0.0	0.0	**1234.4**
1987	0.5	63.4	248.9	82.4	241.3	92.9	196.5	254.4	115.2	21.3	0.8	0.3	**1317.9**
1988	9.7	53.4	5.3	144.6	16.6	106.2	277.9	299.3	229.7	59.9	0.0	0.0	**1202.6**
1989	4.0	75.8	105.4	133.3	5.8	98.2	409.5	323.4	293.9	11.7	0.0	14.5	**1475.5**
1990	0.0	156.6	42.5	117.9	17.6	100.5	325.1	499.7	180.8	32.1	1.5	0.0	**1474.3**
1991	12.8	64.9	156.2	37.5	37.0	171.2	258.5	395.2	146.7	1.4	0.0	44.2	**1325.6**
1992	52.4	31.5	14.6	42.7	84.6	131.6	247.8	387.0	188.6	42.4	0.0	8.1	**1231.3**
1993	15.3	44.6	5.7	147.5	49.0	123.3	266.1	407.6	183.2	28.7	0.0	0.0	**1271.0**
1994	0.0	0.0	62.2	56.0	91.0	154.8	336.3	306.9	142.5	0.3	24.4	0.0	**1174.4**
1995	0.0	96.3	29.7	186.1	84.0	98.0	291.0	222.1	133.7	5.0	0.2	22.7	**1168.8**
1996	31.1	12.2	121.6	78.3	95.2	242.7	387.2	493.9	158.7	1.2	0.6	0.0	**1622.7**
1997	21.2	0.0	18.6	77.3	27.4	76.3	256.3	240.8	89.3	88.3	90.0	0.2	**985.7**
1998	25.3	25.3	45.2	47.0	149.5	149.2	369.0	376.3	134.4	44.5	0.0	0.0	**1365.7**
Mean	**13.3**	**47.1**	**68.7**	**103.2**	**79.2**	**131.2**	**290.8**	**342.8**	**166.5**	**30.8**	**8.6**	**6.5**	**1288.6**
Max	**52.4**	**156.6**	**248.9**	**197.6**	**241.3**	**242.7**	**409.5**	**499.7**	**293.9**	**88.3**	**90.0**	**44.2**	**1622.7**
Min	**0.0**	**0.0**	**5.3**	**37.5**	**5.8**	**76.3**	**180.1**	**222.1**	**89.3**	**0.3**	**0.0**	**0.0**	**985.7**
R. Coeff	**0.1**	**0.4**	**0.6**	**1.0**	**0.7**	**1.2**	**2.7**	**3.2**	**1.6**	**0.3**	**0.1**	**0.1**	
Stdev	**15.3**	**43.5**	**69.9**	**52.4**	**63.4**	**44.6**	**67.5**	**87.8**	**52.6**	**26.4**	**24.3**	**12.9**	**159.8**
75%	**3.0**	**17.8**	**21.5**	**67.8**	**36.4**	**101.1**	**245.3**	**283.5**	**131.0**	**13.0**	**0.0**	**0.0**	**920.4**
85%	**0.0**	**2.0**	**0.0**	**48.9**	**13.4**	**84.9**	**220.9**	**251.7**	**111.9**	**3.4**	**0.0**	**0.0**	**737.3**

Station:- Muketuri Element: Rainfall (mm)

Location :9°33" N Latitude ;38°52" E Longitude Altitude:- 1979 m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1993	8.0	15.2	146.3	131.9	89.2	129.9	290.7	316.1	84.0	134.7	0.4	0.0	**1346.4**
1995	0.0	25.5	40.1	95.9	36.4	32.8	298.2	297.9	107.2	0.0	0.0	17.2	**951.2**
1996	67.6		27.3	44.4		163.1	213.2	314.5	88.2	0.0	6.8	1.4	
1997	17.8	0.0	66.6	32.9	25.5	110.3	271.5	254.6	24.1	94.7	14.4		
1998	7.0	39.3	41.6	14.2	99.0	56.0	311.7	200.4	121.9	66.0	3.1	0.0	**960.2**
1999	9.4	0.0	10.0	13.0	10.5	57.8	286.8	368.4	41.2	44.5	0.0	1.5	**843.1**
2000	0.0	0.0	14.6	84.1	45.1	50.1	238.1					0.0	
2001		36.1	118.3	18.0	94.5	111.9	339.3	204.9	98.2	9.4	9.0	9.9	
2002	50.2	21.4	64.7	27.8	41.3	84.2	242.9	230.3	78.4	0.0	0.0	40.2	**881.4**
2003	35.6	24.0	66.3	50.4	11.0	109.7	369.3	312.2	141.5	0.0	0.0	19.0	**1139.0**
Mean	**21.7**	**17.9**	**59.6**	**51.3**	**50.3**	**90.6**	**286.2**	**277.7**	**87.2**	**38.8**	**3.7**	**9.9**	**994.9**
Max	**67.6**	**39.3**	**146.3**	**131.9**	**99.0**	**163.1**	**369.3**	**368.4**	**141.5**	**134.7**	**14.4**	**40.2**	**1346.4**
Min	**0.0**	**0.0**	**10.0**	**13.0**	**10.5**	**32.8**	**213.2**	**200.4**	**24.1**	**0.0**	**0.0**	**0.0**	**843.1**
R. Coeff	**0.3**	**0.2**	**0.7**	**0.6**	**0.6**	**1.1**	**3.5**	**3.3**	**1.1**	**0.5**	**0.0**	**0.1**	
Stdev	**24.0**	**15.3**	**43.9**	**40.1**	**35.1**	**41.2**	**47.5**	**57.8**	**36.8**	**50.0**	**5.2**	**13.7**	**189.5**
75%	**5.5**	**7.6**	**30.0**	**24.2**	**26.6**	**62.8**	**254.2**	**238.7**	**62.3**	**5.1**	**0.2**	**0.7**	**718.0**
85%	**0.0**	**2.1**	**14.1**	**9.7**	**13.8**	**47.8**	**237.0**	**217.8**	**49.0**	**0.0**	**0.0**	**0.0**	**591.5**

Station:-Sendafa Element:- Rainfall (mm)
Location: 9°09" N Latitude ;39°01" E Longitude Altitude:-2560 m

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1962						23.5	189.0	222.2	160.2	31.0	1.0	26.5	
1963	26.0	53.0	7.0	143.0	29.0	90.3	327.4	433.2	80.7	0.1	3.0	66.9	
1964	8.2	8.3	37.7	79.3	39.5	117.1	279.3	274.2	134.4	37.4	0.0	36.3	
1965	25.3	0.8	18.1	31.3	7.4	27.3	278.7	329.7	72.1	43.9	32.1	0.0	
1966	0.0	141.8	52.9	114.8	9.0	121.4	217.5	392.7	64.1	19.7	0.0	0.0	
1967	0.0	4.0	82.0	150.1	112.3	171.9	293.5	522.4	60.5	20.0	45.2	0.0	
1968	0.0	49.1	0.0	0.0	8.6	33.2	288.6	176.6	186.6	10.1	0.0	0.0	
1969	60.7	69.5	93.4	87.6	6.6	84.7	465.0	293.4	89.6	3.1	6.0	0.0	
1970	81.3	39.8	77.3	49.0	13.9	48.3	322.8	666.5	207.5	7.3	0.0	0.0	
1971	6.0	7.9	173.0	198.3	224.5	490.9	365.5	659.0	246.7	42.7	8.7	24.4	
1972	30.7	0.0	55.0	193.4	134.5	174.4	277.1	208.9	62.0	0.8	12.0	12.0	
1973	0.0	0.0	0.0	13.0	61.5	62.3	217.1	455.6	175.8	0.0	0.0	3.0	
1974	0.0	0.0	87.5	0.0	93.7	123.4	267.5	209.4	116.1	0.0	0.0	0.0	
1975	0.0	0.0	43.2	58.7	22.0	95.0	284.4	296.0	100.2	6.5	0.0	0.0	**906.0**
1976	0.0	0.0	50.4	115.6	103.9	63.2	234.0	214.8	92.9	10.1	57.6	23.5	**966.0**
1977	76.9	21.4	22.0	42.4	73.4	159.6	384.4	385.1	242.7	147.1	18.0	0.0	**1573.0**
1978	0.5	86.7	47.9	43.5	36.7	164.5	265.9	288.4	152.5	63.7	0.0	0.0	**1150.3**
1979	133.7	8.6	77.6	56.2	81.1	117.8	380.6	256.9	136.4	9.9	0.0	56.4	**1315.2**
1980	27.9	38.5	32.7	64.2	41.2	88.8	325.5	379.4	49.0	28.0	7.1	0.0	**1082.3**
1981	0.0	8.9	247.1	94.3	0.0	24.0	413.6	241.0	125.9	9.3	0.0	5.4	**1169.5**
1982	39.4	84.7	54.8	31.7	71.5	31.3	226.1	262.8	77.0	40.7	14.5	14.1	**948.6**
1983	1.4	25.4	43.1	91.6						4.7	0.0	0.0	
1984	0.0	0.0	45.2	0.0	78.4	169.1	339.7	184.9	118.3	0.0	0.0	1.2	**936.8**
1985	9.5	0.0	38.6	158.9	157.9	76.4	394.1	451.5	105.9	10.8	0.0	0.0	**1403.6**

Station:- Sendafa Element:-Rainfall (mm)

Location: 9°09" N Latitude ;39°01" E Longitude Altitude:-2560 m

1986	0.0	28.1	117.3	193.7	32.3	164.7	270.9	244.5	143.2	0.0	0.0	0.0	**1194.7**
1987	0.2	33.1	128.9	80.5	110.1	55.7	223.6	143.6	105.3	8.7	0.0	0.0	**889.7**
1988	0.0	32.9	0.9	132.3	22.1	104.6	451.1	360.3	198.4	5.2	0.0	0.0	**1307.8**
1989	18.0	10.3	43.3	112.0	21.4	46.3	357.2	339.4	139.9	10.2	0.4	0.6	**1099.0**
1990	21.5	190.4	35.7	148.4	38.2	88.5	273.4	470.4		3.8	0.0	0.0	
1991	15.9	20.5	118.1	0.5				218.9	134.5		0.0	5.6	
1992	10.7	46.5	1.0	29.1	32.5	69.6	257.5	357.9	151.4	55.5	0.0	0.0	**1011.7**
1993	4.3	105.2	0.0	118.7			457.2	353.0	158.4	13.7	0.0	0.0	
1994	0.0	0.0	0.0	64.1	11.0	130.7	337.9	184.1		0.0	6.4	0.0	
1995	0.0	11.4	106.2	116.7	42.9	22.5	230.8	338.8		0.0	0.0	0.0	
1996	69.4	5.6	99.3			180.4	339.2	338.6	111.4	0.0	0.0	0.0	
1997	44.5	0.0	29.4	60.0	44.8	149.7	303.8	251.1	84.7	72.0	34.6	0.0	**1074.6**
1998	28.9	23.3	5.8	27.0	38.2	68.8	359.1	289.7		98.9	0.0	0.0	
1999	0.0	1.2	56.3	11.8	25.4	144.7	441.6	365.2	74.8	79.6	0.0	0.0	**1200.6**
2000	0.0	0.0	0.0	44.0	87.9	166.0	352.2	373.4	113.9	5.0	10.0	0.0	**1152.4**
2001	0.0	35.3	154.1	9.2	135.2	149.5	335.5	276.8	27.4	9.8	0.0	0.0	**1132.8**
2002	21.2	3.4	67.2	20.6	60.9	144.4	246.8	289.2	85.4	0.0	0.0	27.4	**966.5**
2003	75.5	0.0	29.7	126.9	1.7	120.6	304.4	373.4	122.4	0.0	0.0	19.7	**1174.3**
2004	21.2	7.1	2.2	118.9	0.0								
Mean	**20.4**	**28.6**	**56.7**	**78.8**	**55.6**	**111.9**	**314.5**	**326.2**	**121.8**	**22.2**	**6.1**	**7.7**	**1150.6**
Max	**133.7**	**190.4**	**247.1**	**198.3**	**224.5**	**490.9**	**465.0**	**666.5**	**246.7**	**147.1**	**57.6**	**66.9**	**1573.0**
Min	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**22.5**	**189.0**	**143.6**	**27.4**	**0.0**	**0.0**	**0.0**	**889.7**
R. Coeff	**0.2**	**0.3**	**0.6**	**0.8**	**0.6**	**1.2**	**3.3**	**3.4**	**1.3**	**0.2**	**0.1**	**0.1**	
Stdev	**29.9**	**41.3**	**53.4**	**57.6**	**50.4**	**79.9**	**71.6**	**117.0**	**51.5**	**31.8**	**13.1**	**15.5**	**173.6**
75%	**0.3**	**0.8**	**20.7**	**39.9**	**21.5**	**58.0**	**266.2**	**247.3**	**87.1**	**0.7**	**0.0**	**0.0**	**742.5**
85%	**0.0**	**0.0**	**1.3**	**19.1**	**3.3**	**29.1**	**240.3**	**204.9**	**68.4**	**0.0**	**0.0**	**0.0**	**566.4**

Station: Fitche Wereda : Grar Garsso Awraja : Selallie
Altitude : 2750 Long.: 38°42 ; Lat. 9°48" Element: Monthly total rainfall (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1954	X	X	73.9	45.0	34.0	138.0	412.4	343.9	183.8	1.0	0.0	2.0	**1234.0**
1955	52.2		10.5	71.7	23.0	48.3	586.9	476.7	260.7	51.5	X	X	
1956	X	0.0	24.8	111.3	1.0	125.5	495.2	375.5	64.0	134.8	(0.0)	X	**1332.1**
1957	X	46.0	260.3	93.0	93.5	6.0	71.6	412.0	75.8	9.0	(0.0)	X	**1067.2**
1958	X	X	6.9	4.5	42.0	114.5	16.4	72.8	92.0	10.5	X	X	**359.6**
1959	31.5	47.0	11.0	19.0	24.0	41.5	108.5	X	X	37.0	35.0	8.5	**363.0**
1961	X	X	6.0	126.5	114.5	24.5	12.0	X	X	X	X	X	**283.5**
1968	1.8	4.6	10.0	X	X	X	55.8	65.0	124.9	X	2.0	0.0	**264.1**
1969	69.7	X	X	X	11.4		5.5	44.1	X	0.5	4.0	0.0	
1970	48.0	X	X	X	4.0	28.0	71.2	54.7	X	7.0	0.0	4.0	**216.9**
1971	X	X	X	X	X	X	X	X	X	X	X	X	**0.0**
1972						168.2	146.0		97.7				
1973			0.0	69.0		54.8	1.9	460.5	157.9	58.0	11.5	0.0	
1974	0.0	14.9	109.9		157.7	197.1	49.0	5.4	144.5	6.6			
1975	0.6	4.1	40.0	87.8	91.0	189.8	89.0	(335.7)	225.9		0.0		
1976	0.0		15.0	19.1	64.9	59.1	41.0	90.6	147.6	0.0	49.1	0.7	
1977	33.4	37.9	34.1	27.1	50.8	8.0	599.9	19.0		221.9	0.0	1.1	
1978	0.0		56.8	29.8	40.2	109.7			163.7	63.8		15.9	
1979	79.9	23.4	66.6	X	134.2	69.2	361.2						
1980	X	X	X	X	10.8	52.4	127.9	167.1	32.7	4.9	0.8	0.0	**396.6**
1981	1.2	8.8	109.0	86.0	32.5	21.0	452.7	257.0	120.3	0.0	1.7	12.7	**1102.9**
1982		36.8	84.3	60.4	35.6	15.1	141.7						
1983	X	X	X	X	48.9	81.7	99.0	80.6	75.7	7.5	9.5	0.0	**402.9**
1984	0.0	0.1	0.3	0.1	2.9	4.4	8.9	4.1	3.4	0.0	0.0	0.0	**24.2**
1985	0.0	0.0	42.1	93.4	69.2	9.5	336.4		66.0	3.5	20.0	0.0	
1986	12.2	75.6	19.5	109.3	113.2	57.5	234.1	367.8	72.0	24.0	0.0	3.0	**1088.2**
1987	0.0	25.6	269.0	107.1	151.4	36.0	107.1	270.7	39.9	3.8	2.0	7.6	**1020.2**
1988	23.5	91.1	8.9	80.6	16.9	41.1	339.5	369.6	163.3	10.3			
1989	19.4	45.2	66.8	117.7	35.4	45.6	260.0	386.0	93.9	33.6	2.0	30.4	**1136.0**
1990	0.0	106.4	56.5	70.0	11.2	12.9	398.0	281.9	216.8	11.8	0.0	0.6	**1166.1**

Station: Fitche Wereda : Grar Garsso Awraja : Selallie
Altitude : 2750 Long.: 38°42 ; Lat. 9°48" Element: Monthly total rainfall (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1991	21.6	53.8	80.5	1.9	32.1	94.7	256.7	365.7	143.4	8.5	0.0	1.4	**1060.3**
1992	48.1	100.9	63.4	35.9	40.8	70.4	251.0	336.4	99.3	49.0	16.5	18.3	**1130.0**
1993	21.4	57.1	20.8	133.0	94.6	78.2	377.5	285.9	123.0	14.4	0.0	0.0	**1111.3**
1994	1.6	2.1	70.2	55.1	18.8	98.4	307.1	324.4	128.0	0.1	10.6	0.0	**1016.4**
1995	0.0	52.3	45.2	123.2	53.0	52.6	329.2	331.7	130.1	0.0	0.0	35.5	**1152.8**
1996	29.5	11.5	102.3	79.8	80.1	209.6	393.0	397.9	198.9	7.2	18.1	1.8	**1529.7**
1997	43.3	0.0	72.0	45.1	29.0	149.8	347.7	276.8	51.1	62.6	20.1	1.8	**1099.3**
1998	11.2	19.0	49.1	58.3	45.8	87.8	266.9	383.8	181.1	40.5	0.2	0.0	**1143.7**
1999	42.6	0.0	3.6	12.3	21.8	64.2	422.4	496.0	57.1	79.9	6.6	0.9	**1207.4**
Mean	**18.2**	**34.8**	**59.4**	**65.3**	**53.5**	**74.7**	**243.4**	**261.5**	**117.3**	**28.8**	**7.3**	**5.9**	**970.3**
Max	**79.9**	**106.4**	**269.0**	**133.0**	**157.7**	**209.6**	**599.9**	**496.0**	**225.9**	**221.9**	**49.1**	**35.5**	**1529.7**
Min	**0.0**	**0.0**	**0.0**	**0.1**	**2.9**	**4.4**	**1.9**	**4.1**	**3.4**	**0.0**	**0.0**	**0.0**	**24.2**
R. Coeff	**0.2**	**0.4**	**0.7**	**0.8**	**0.7**	**0.9**	**3.0**	**3.2**	**1.5**	**0.4**	**0.1**	**0.1**	
Stdev	**21.7**	**34.2**	**54.6**	**39.3**	**43.7**	**58.2**	**154.0**	**150.4**	**58.7**	**46.9**	**11.6**	**10.1**	**444.2**
75%	**3.6**	**11.8**	**22.6**	**38.8**	**24.1**	**35.5**	**139.5**	**160.0**	**77.7**	**0.0**	**0.0**	**0.0**	**513.6**
85%	**0.0**	**0.0**	**2.8**	**24.6**	**8.2**	**14.4**	**83.8**	**105.6**	**56.5**	**0.0**	**0.0**	**0.0**	**295.9**

Mean Monthly Runoff Data

Sibilu River near Chancho

Element : Mm^3

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981	0.36	0.30	0.79	0.83	0.49	0.34	33.17	94.71	61.28	5.29	1.53	0.66	**199.73**
1982	0.70	0.32	0.36	0.49	0.66	0.44	11.40	70.59	34.91	6.48	1.89	0.94	**129.17**
1983	0.36	0.38	0.45	0.87	2.70	2.69	21.13	107.10	45.78	4.40	1.52	0.87	**188.25**
1984	0.41	0.29	0.30	0.25	0.31	4.82	87.57	85.40	46.60	2.14	0.82	0.56	**229.47**
1985	0.36	0.30	0.17	0.24	0.60	0.30	33.95	136.34	51.27	3.20	1.38	0.78	**228.89**
1986	0.35	0.28	0.39	0.42	0.40	0.80	37.51	58.14	18.06	3.46	1.31	0.60	**121.72**
1987	0.67	0.47	0.87	1.54	1.67	6.05	48.10	74.14	24.05	3.74	1.13	0.84	**163.27**
1988	0.45	0.38	0.34	0.25	0.30	0.31	35.88	106.81	65.04	8.64	1.80	1.33	**221.53**
1989	0.58	0.64	0.53	0.63	0.33	0.42	43.25	109.08	35.70	4.45	1.53	0.91	**198.06**
1990	0.74	0.55	0.66	0.93	0.55	0.51	16.87	117.07	48.93	9.93	1.70	0.89	**199.32**
1991	0.90	0.64	0.77	0.45	0.22	0.62	34.51	107.42	55.12	3.18	1.33	0.84	**206.00**
1992	0.47	0.51	0.40	0.26	0.24	0.38	12.25	95.18	48.59	3.33	1.79	1.10	**164.50**
1993	0.69	0.35	0.25	0.64	0.59	2.16	43.17	106.34	64.57	11.36	1.69	1.09	**232.90**
1994	0.47	0.19	0.23	0.31	0.32	1.51	26.61	71.89	32.14				
1995	**0.53**	0.31	0.31	0.71	0.86	0.73	24.43	66.21	21.67	2.75	1.48	0.77	**120.74**
1996	0.74	0.50	0.53	0.44	0.37	5.20	63.94		43.99	4.99	1.33	0.87	
1997	0.43	0.21	0.23	0.63	0.25	0.39	19.26	52.94	14.42	2.08	1.50	0.68	**93.02**
1998	0.73	0.27	0.29	0.27	0.49	2.42	47.39	114.04	43.61	12.32	1.68	0.70	**224.19**
1999	0.43	0.19	0.27	0.22	0.21	0.83	29.51	98.48	37.43	6.67	1.20	0.62	**176.06**
2000	0.37	0.18	0.12	0.22	0.33	0.48	19.56	101.46	26.05	4.83	1.23	0.80	**155.63**
2001	0.42	0.23	0.45	0.45	0.77	3.63	58.04	84.06	29.29	2.27	0.90	0.52	**181.03**
2002	0.44	0.21	0.33	0.29	0.25	0.43	34.46	75.10	15.52	1.58	0.53	0.40	**129.54**
Mean	**0.53**	**0.35**	**0.41**	**0.52**	**0.59**	**1.61**	**35.54**	**92.02**	**39.27**	**5.10**	**1.39**	**0.80**	**178.15**
Std dev	**0.16**	**0.14**	**0.20**	**0.32**	**0.57**	**1.78**	**18.12**	**21.59**	**15.48**	**3.09**	**0.35**	**0.22**	**42.18**
75%	**0.4**	**0.3**	**0.3**	**0.3**	**0.2**	**0.4**	**23.3**	**77.5**	**28.8**	**3.0**	**1.2**	**0.7**	**149.7**
85%	**0.4**	**0.2**	**0.2**	**0.2**	**0.0**	**0.0**	**16.8**	**69.6**	**23.2**	**1.9**	**1.0**	**0.6**	**134.4**
Max	**0.90**	**0.64**	**0.87**	**1.54**	**2.70**	**6.05**	**87.57**	**136.34**	**65.04**	**12.32**	**1.89**	**1.33**	**232.90**
Min	**0.35**	**0.18**	**0.12**	**0.22**	**0.21**	**0.30**	**11.40**	**52.94**	**14.42**	**1.58**	**0.53**	**0.40**	**93.02**
CV	**0.31**	**0.41**	**0.50**	**0.62**	**0.97**	**1.11**	**0.51**	**0.23**	**0.39**	**0.61**	**0.25**	**0.27**	**0.24**

Deneba River near Chancho

Element : Mm^3

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1981					0.18	0.00	11.58	20.75	13.67	2.75	0.44	0.18	
1982	0.11	0.08	0.02	0.18	0.22	0.12	1.68	18.24	7.08	1.73	0.50	0.24	**30.20**
1983	0.13	0.11	0.01	0.00	0.43	0.84	3.73	23.59	11.52	2.84	0.62	0.23	**44.05**
1984	0.13	0.03	0.00	0.00	0.01	1.42	18.88	20.29	12.38	1.50	0.32	0.11	**55.07**
1985	0.05	0.04	0.00	0.00	0.21	0.08	7.67	30.77	13.22	2.08	0.47	0.19	**54.78**
1986	0.12	0.07	0.16	0.12	0.08	0.23	8.49	13.28	6.53	1.16	0.25	0.16	**30.65**
1987	0.10	0.02	0.14	0.44	0.44	2.14	6.44	21.96	9.76	1.23	0.33	0.20	**43.20**
1988	0.12	0.15	0.11	0.10	0.08	0.21	9.67	23..71	18.12	3.45	0.40	0.21	
1989	0.17	0.09	0.02	0.16	0.13	0.13	12.00	22.76	16.48	1.69	0.32	0.24	**54.19**
1990	0.16	0.14	0.12	0.12	0.09	0.11	5.99	27.62	14.12	1.83	0.12	0.15	**50.57**
1991	0.19	0.11	0.25	0.09	0.35	0.18	7.66	35.29	13.30	1.31	0.27	0.15	**59.13**
1992	0.16	0.06	0.02	0.02	0.06	0.14	1.21	24.55	15.34	3.01	0.68	0.36	**45.61**
1993	0.16	0.04	0.01	0.00	0.27	1.16	25.37	39.40	20.75	3.22	0.78	0.28	**91.44**
1994	0.08	0.00	0.00	0.00	0.00	0.19	8.40	26.99	10.84	19.63	25.94	0.24	**92.31**
1995	0.14	0.00	0.00	0.10	0.29	0.22	10.67	20.72	6.11	1.03	0.29	0.28	**39.85**
1996	0.21	0.07	0.00	0.01	0.09	0.41	11.13	30.32	11.90	2.65	0.48	0.23	**57.50**
1997	0.08	0.02	0.00	0.00	0.00	0.20	11.51	36.09	7.84	1.33	0.37	0.18	**57.61**
1998	0.17	0.05	0.00	0.00	0.00	0.13	52.31	60.98	25.22	5.21	0.75	0.30	**145.12**
1999	0.19	0.05	0.00	0.00	0.00	0.07	5.77	81.69	8.25	4.12	0.70	0.35	**101.19**
2000	0.18	0.02	0.00	0.00	0.05	0.23	2.37	54.89	7.88	3.32	0.75	0.46	**70.15**
2001	0.18	0.11	0.05	0.06	0.27								
Mean	**0.14**	**0.06**	**0.05**	**0.07**	**0.15**	**0.41**	**11.13**	**32.11**	**12.52**	**3.25**	**1.74**	**0.24**	**62.37**
Std dev	**0.04**	**0.04**	**0.07**	**0.11**	**0.14**	**0.55**	**11.23**	**17.01**	**4.97**	**4.01**	**5.70**	**0.08**	**28.76**
75%	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**3.6**	**20.6**	**9.2**	**0.5**	**0.0**	**0.2**	**43.0**
85%	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**14.5**	**7.4**	**0.0**	**0.0**	**0.2**	**32.6**
Max	**0.21**	**0.15**	**0.25**	**0.44**	**0.44**	**2.14**	**52.31**	**81.69**	**25.22**	**19.63**	**25.94**	**0.46**	**145.12**
Min	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.21**	**13.28**	**6.11**	**1.03**	**0.12**	**0.11**	**30.20**
CV	**0.30**	**0.72**	**1.54**	**1.53**	**0.92**	**1.35**	**1.01**	**0.53**	**0.40**	**1.23**	**3.28**	**0.35**	**0.46**

Muger River near Chancho

Element : Mm^3

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1963	0.84	0.72	0.5	1.13	1.7	1.61	66.37			3.37	1	0.88	
1964	0.47	0.3	0.27	0.25	0.22	0.355	7.672	25.913	16.556	6.89	1.08	0.49	**60.47**
1965	0.42	0.19	0.16	0.28	0.17	1.07	22.5	90.2			0.95	0.478	
1966	0.196	0.324	0.228	0.567	0.19	0.681	25.43	115.18	55.09				
1967	0.39	0.29	0.31	0.32	2.84	2.26	25.795	51.91	33.05	6.683	1.538	0.78	**126.18**
1968		0.58	1.86	4.63	1.33	4.48	42.08				1.24	0.61	
1969	0.75	0.91	2.21	0.99	0.44	0.61	9.42		35.35	5.62	1.24	0.78	
1970	0.56	0.56	1.78	1.00	0.44	0.61	9.45		35.35	5.62	1.24	0.78	
1971	0.55	0.31	0.42	0.65	0.69	1.82	38.11	79.73	33.37	6.12	1.59	0.85	**164.20**
1972	0.47	0.52	0.60	0.71	0.67	0.78	55.38	117.05	26.36	2.40	0.68	0.45	**206.08**
1973	0.36	0.16	0.17	0.18	0.31	1.63	36.77	135.51	86.02	12.08	1.26	0.59	**275.03**
1974	0.34	0.24	0.36	0.50	0.29	1.50	67.09	90.36	42.22	4.74	0.90	0.37	**208.91**
1975	0.23	0.16	0.17	0.50	0.23	2.65	94.93	126.20	69.61	7.72	1.09	0.51	**303.99**
1976	0.40	0.20	0.29	0.36	0.62	1.55	72.54	88.92	38.33	2.41	1.07	0.51	**207.20**
1977	0.94	0.58	0.28	0.32	0.49	3.10	125.08	141.37	79.56	43.93	35.69	12.79	**444.13**
1978	5.28	4.04	4.69	3.88	3.94	3.72	42.64	72.48	66.07	16.56	1.55	0.99	**225.84**
1979	1.01	0.83	0.47	0.57	0.92	1.16	84.65		60.34	6.33	1.18	0.77	
1980	0.49	0.32	0.42	0.36	0.31	0.80	58.41	136.69	52.74	4.09	0.93	0.58	**256.14**
1981	0.35	0.29	0.69	1.07	0.67	0.37	62.72	132.50	84.47	6.88	0.81	0.59	**291.41**
1982	0.85	0.53	0.32	0.60	0.92	0.72	16.44	101.27	30.84	6.30	1.62	0.75	**161.16**
1983	0.64	0.52	0.30	0.50	2.82	2.16	23.59	139.67	65.66	6.73	1.57	0.58	**244.73**
1984	0.16	3.28	3.53	2.94	4.13	9.40	117.03	111.56	67.99	2.89	1.51	0.92	**325.34**
1985	0.49	0.34	0.22	0.37	0.89	0.64	53.93	182.52		4.05	1.27	0.69	

Muger River near Chancho

Element : Mm^3

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1986	0.48	0.45	0.64	0.76	0.52	1.42	55.04	96.67	53.07		1.14	0.79	
1987	0.57	0.39	1.21	2.70	2.60	9.27	62.04	105.50	41.01	0.65	1.31	0.86	**228.10**
1988	0.60	0.69	0.56	0.58	0.40	0.68	58.14	154.79	92.27	12.61	1.66	0.94	**323.92**
1989	0.73	0.72	0.54	1.04	0.52	0.69	61.58	163.16	55.20	6.32	1.38	1.01	**292.89**
1990	0.67	0.83	0.69	1.27	0.62	0.78	35.14	172.63	86.57	8.02	1.58	1.04	**309.83**
1991	0.63	1.07	1.32	0.54	0.38	1.29	41.55	156.11	59.67	4.54	1.16	0.90	**269.17**
1992	0.70	0.64	0.37	0.43	0.54	0.87	25.38	119.54	60.86	6.57	1.36	0.82	**218.07**
1993	0.57	0.42	0.30	1.04	1.32	3.27	81.08	169.51	110.46	14.33	2.00	1.01	**385.31**
1994	0.68	0.27	0.38	0.50	0.44	2.27	52.39	104.80	53.22	6.13	1.41	0.87	**223.35**
1995	0.45	0.48	0.42	1.01	0.93	0.97	38.93	96.38	30.25	3.45	1.06	0.79	**175.12**
1996	0.85	0.43	0.48	0.48	0.55	6.93	86.66	174.32	69.03	6.57	1.03	0.53	**347.86**
1997	0.29	0.16	0.15	0.29	0.17	0.48	32.84	76.72	24.50	2.08	1.02	0.51	**139.21**
1998	0.53	0.24	0.21	0.19	0.53	1.83	66.19	149.78	66.53	21.32	2.15	0.77	**310.26**
1999	0.49	0.13	0.19	0.13	0.15	0.76	33.93	153.16	47.57	10.48	1.46	0.61	**249.07**
2000	0.35	0.13	0.09	0.18	0.36	0.57	26.21	138.01	38.69	7.49	1.45	0.71	**214.22**
2001	0.43	0.19	0.48	0.35	0.87	8.84		105.81	39.33	2.83	0.82	0.49	
2002	0.44	0.20	0.29	0.28	0.19	0.48	54.78	118.66	34.31	1.16	1.00	0.54	**212.32**
2003	0.33	0.15	0.21	0.38	0.20	1.51	102.46						
Mean	**0.65**	**0.58**	**0.70**	**0.85**	**0.89**	**2.11**	**51.81**	**119.85**	**53.93**	**7.67**	**2.15**	**1.02**	**246.65**
Std dev	**0.78**	**0.75**	**0.92**	**0.97**	**0.98**	**2.38**	**28.52**	**36.18**	**21.83**	**7.57**	**5.52**	**1.94**	**80.18**
75%	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.5**	**32.6**	**95.4**	**39.2**	**2.6**	**0.0**	**0.0**	**192.6**
85%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**22.3**	**82.3**	**31.3**	**0.0**	**0.0**	**0.0**	**163.5**
Max	**5.28**	**4.04**	**4.69**	**4.63**	**4.13**	**9.40**	**125.08**	**182.52**	**110.46**	**43.93**	**35.69**	**12.79**	**444.13**
Min	**0.16**	**0.13**	**0.09**	**0.13**	**0.15**	**0.36**	**7.67**	**25.91**	**16.56**	**0.65**	**0.68**	**0.37**	**60.47**
CV	**1.20**	**1.29**	**1.32**	**1.15**	**1.10**	**1.13**	**0.55**	**0.30**	**0.40**	**0.99**	**2.56**	**1.90**	**0.33**

Soil Auger Data

Site No	Depth cm	Northing	Easting	Colour (moist)	Slope %	Land Use	Drainage Class	Texture
Ag1	0-20	1047377	0461814	10YR3/2	>50	Grazing	Excessively	C
Ag2	0-20	1047298	0461107	10YR3/2	>50	Grazing	Excessively	CL
Ag3	0-20	1047053	0461272	10YR4/2	>45	Grazing	Excessively	SCL
Ag4	0-20 20-80 SWR	1047799	0464089	10YR4/2 10YR3/2	8	Cultivation	Mod. well Mod. well	CL SCL
Ag5	0-20 20-40 SWR	1047915	0464456	2.5Y3/2 2.5Y4/1	12	Cultivation	Mod. well Mod. well	ZCL ZCL
Ag6	0-20 20-80	1048677	0464435	10YR3/2 2.5Y4/2	12	Cultivation	Mod. well Mod. well	ZCL ZC
Ag7	0-30 30-100	1039763	0461272	10YR3/4 2.5Y3/3	6	Cultivation	Mod. well Mod. well	C ZC
Ag8	0-40 40-125	1040993	0462156	10YR3/2 2.5Y3/3	8	Cultivation	Mod. well Mod. well	ZC ZCL
Ag9	0-40	1040301	0461592	10YR2/2	7	Cultivation	Mod. well	ZCL
Ag10	0-40 40-100	1040378	0461339	10YR3/4 2.5YR3/6	12	Cultivation	Mod. well Mod. well	ZC CL
Ag11	0-25 25-50	1047670	0455234	5YR4/4 7.5YR3/3	6	Cultivation	Mod. well Mod. well	ZC SCL
Ag12	0-40 40-125	1046964	0455818	2.5Y2.5/1 10YR3/2	6	Cultivation	Well Well	L L
Ag13	0-30	1046671	0454704	7.5YR4/6	10	Grazing	Mod. well	C
Ag14	0-35 35-50	1046853	0454227	10YR3/4 10YR3/6	8	Grazing	Mod. well Well	C L

Soil Auger Data

Site No	Depth cm	Northing	Easting	Colour (moist)	Slope %	Land Use	Drainage Class	Texture
Ag15	0-20 Bed rock	1047085	0452788	10YR3/3	12	Grazing	Well	C
Ag16	0-25 25-50	1048677	0464435	2.5Y4/2 2.5Y5/4	10	Cultivation	Mod. well Mod. well	C C
Ag17	0-40 40-120	1049201	0457150	2.5Y2.5/1 2.5Y3/1	6	Cultivation	Mod. well Mod. well	ZCL ZL
Ag18	0-40 40-100	1047378	0456886	5YR4/3 7.5YR3/4	7	Cultivation	Mod. well Well	ZC SCL
Ag19	0-30 30-100	1048497	0456318	10YR3/2 10YR4/3	7	Cultivation	Mod. well Mod. well	ZCL ZC
Ag20	0-20 20-80	1049723	0454354	10YR3/2 10YR4/2	10	Cultivation	Mod. well Mod. well	ZCL ZC
Ag21	0-30 30-60	1050712	0456102	2.5Y4/3 5Y5/3	10	Cultivation	Mod. well Mod. well	C C
Ag22	0-30 30-100	1044865	0460530	7.5YR3/4 7.5YR5/6	10	Grazing	Mod. well Mod. well	ZC C
Ag23	0-40	1045863	0460225	7.5YR4/6	12	Cultivation	Mod. well	ZCL
Ag24	0-30	1048196	0460193	10YR3/1	>30	Cultivation	Mod. well	ZCL
Ag25	0-30	1048488	0459339	7.5YR4/4	8	Cultivation	Mod. well	ZCL
Ag26	0-30 30-60	1050780	0459485	7.5YR4/6 7.5Y4/4	7	Cultivation	Mod. well Mod. well	ZCL C
Ag27	0-30 30-100	1040609	0464085	10YR3/4 7.5YR3/2	10	Cultivation	Mod. well Mod. well	C C
Ag28	0-30 30-50	1040913	0463617	7.5YR3/3 7.5YR3/3	10	Cultivation	Mod. well Mod. well	C C
Ag29	0-30 30-60	1036811	0465064	2.5Y3/2 2.5Y3/3	8	Cultivation	Mod. well Mod. well	ZC ZCL

Soil Auger Data

Site No	Depth cm	Northing	Easting	Colour (moist)	Slope %	Land Use	Drainage Class	Texture
Ag30	0-40 40-120	1035709	0464656	2.5Y2.5/1 2.5Y3/1	6	Cultivation	Well Well	CL CL
Ag31	0-40 40-120	1039684	0463748	2.5Y3/2 2.5Y3/3	7	Cultivation	Mod. well Mod. well	ZC ZC
Ag32	0-20 20-50	1040528	0463332	10YR3/3 10YR3/6	6	Cultivation	Mod. well Mod. well	ZCL ZC
Ag33	0-30 30-100	1047428	0462704	10YR2/1 10YR2/2	7	Cultivation	Mod. well Mod. well	C C
Ag34	0-30 30-100	1048411	0462723	10YR3/1 10Y3/2	5	Cultivation	Mod. well Mod. well	C C
Ag35	0-30 30-100	1047928	0462356	10YR3/2 10YR3/1	6	Cultivation	Mod. well Mod. well	C C
Ag36	0-30 30-60	1057612	0459591	7.5YR3/1 7.5YR3/2	6	Cultivation	Mod. well Mod. well	ZC ZCL
Ag37	0-40	1057495	0461846	7.5YR4/4	10	Cultivation	Mod. well	ZCL
Ag38	0-40 40-100	1058342	0460205	5Y2.5/1 2.5Y2.5/1	3	Cultivation	Mod. well Mod. well	ZC ZCL
Ag39	0-40 40-100	1046943	0461884	2.5Y3/2 7.5YR4/4	6	Cultivation	Mod. well Mod. well	ZC ZCL
Ag40	0-40 40-100	1045250	0463105	2.5Y3/2 2.5Y3/1	6	Cultivation	Mod. well Mod. well	ZC ZCL
Ag41	0-20	1046163	0462551	10YR3/2	6	Cultivation	Mod. well	ZCL
Ag42	0-20	1044337	0463658	10YR3/3	7	Cultivation	Mod. well	ZC
Ag43	0-40 40-100	1043280	0463723	2.5Y3/2 2.5Y3/1	5	Cultivation	Mod. well Mod. well	ZC ZCL
Ag44	0-20 20-80	1056720	0470650	10YR2/1 10YR3/2	8	Cultivation	Mod. well Mod. well	C C

SOIL PROFILE PIT DATA

Survey Area	Derba	Pit no.	1
Author	Aberra	Date: 10/8/07	
Location, UTM	N: 1047801		
	E: 0464094	Slope %	12
Topography	Sloping land	Position	Middle slope
Parent material	Basalt	Surface stones	Few
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	Common boulders
Land cover	Cultivated	Land Use	Rainfed
Crop type	Barley & wheat	Soil unit	Pellic Vertisol

0-30 cm **10YR2/1(black) moist; loam; well drained; common fine and medium prominent black and red mottles; strong, medium to coarse, sub-angular blocky structured; sticky and plastic wet; many coarse and fine roots; common fine to medium pores; slow permeability; clear and smooth boundary.**

30-60 cm **10YR3/2 (very dark brown) moist; loam; well drained; few stones; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; common stones; very few and very fine pores; slow permeability; clear and smooth boundary.**

60-100 cm **10YR3/1 (very dark gray) moist; loam; drained; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; many stones; slow permeability.**

Remarks: Few shallow gullies

Survey Area	Derba	Pit no.	2
Author	Aberra & Milliyon	Date: 11/8/07	
Location, UTM	N: 1040750		
	E: 0461881	Slope %	6
Topography	Gently sloping	Position	Middle slope
Parent material	Basalt	Surface stones	Few
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	No
Land cover	Cultivated	Land Use	Rainfed
Crop type	Barley & wheat	Soil unit	Vertic Cambisols

0-25 cm **10YR2/2(very dark brown) moist; clay; moderately well drained; common fine and medium prominent black and red mottles; strong, medium to coarse, sub-angular blocky structured; sticky and plastic wet; common coarse and fine roots; common fine to medium pores; slow permeability; clear and smooth boundary.**

25-45 cm **10YR3/2 (very dark brown) moist; clay; moderately well drained; few fine roots; few stones; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; very few and very fine pores; slow permeability; clear and smooth boundary.**

45-100 cm **10YR3/3 (dark brown) moist; clay; imperfectly drained; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; many stones; slow permeability.**

Remarks: Few shallow gullies

Survey Area	Muger	Pit no.	3
Author	Aberra	Date: 10/8/07	
Location, UTM	N: 1047881		
	E: 0453697	Slope %	8
Topography	Gently sloping	Position	Middle slope
Parent material	Limestone	Surface stones	Few
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	No
Land cover	Cultivated	Land Use	Rainfed
Crop type	Maize	Soil unit	

0-30 cm **10YR3/6(dark yellowish brown) moist; sandy clay; moderately well drained; weak sub-angular blocky structured; sticky and plastic wet; many coarse and fine roots; common fine to medium pores; slow permeability; moderately calcareous; clear and smooth boundary.**

30-60 cm **2.5Y4/3 (olive brown) moist; sandy clay; moderately well drained; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; very few and very fine pores; slow permeability; clear and smooth boundary.**

60-100 cm **5Y5/3 (olive) moist; sandy clay; moderately well drained; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; many stones; slow permeability.**

Remarks: Top soil affected by splash erosion

Survey Area	Derba	Pit no.	4
Author	Aberra &Milliyon	Date: 17/8/07	
Location, UTM	N: 1048399		
	E: 0459908	Slope %	8
Topography	Rolling	Position	Middle slope
Parent material	Undifferentiated	Surface stones	Few
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	No
Land cover	Cultivated	Land Use	Rainfed
Crop type	Maize & teff	Soil unit	Regosols

0-40 cm **5YR3/1 (very dark gray) moist; silt clay; moderately well drained; weak medium to coarse, granular structured; friable, sticky and plastic wet; common medium and fine roots; common fine to medium pores; slow permeability; non calcareous; clear and smooth boundary.**

40-100 cm **7.5YR3/2 (dark brown) moist; silt clay loam; well drained; few stones; moderate, medium to coarse, sub-angular blocky structured; friable moist, sticky and plastic wet; very few and very fine pores; slow permeability;**

Remarks: Annually flooding

Survey Area	Yaya Gulele	Pit no.	5
Author	Aberra	Date: 19/8/07	
Location, UTM	N: 1057999	Elevation, masl	2424
	E: 0461753	Slope %	6
Topography	Undulating	Position	Middle slope
Parent material	Basalt	Surface stones	Few
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	No
Land cover	Cultivated	Land Use	Rainfed
Crop type	Barley & wheat	Soil unit	Vertisol

0-40 cm **5Y3/1(very dark gray) moist; clay; moderately well drained; common fine and medium prominent black and red mottles; strong, medium to coarse, granular structured; sticky and plastic wet; many coarse and fine roots; common fine to medium pores; slow permeability; non calcareous; clear and smooth boundary.**

40-100 cm **10YR3/2 (very dark brown) moist; clay; moderately well drained; few stones; dominant fine and medium faint black and red mottles; moderate, medium to coarse, platy structured; friable moist, sticky and plastic wet; very few and very fine pores; slow permeability.**

Remarks: Few shallow gullies

Survey Area	Derba	Pit no.	6
Author	Abebe	Date: 17/8/07	
Location, UTM	N: 1040922	Elevation, masl	2400
	E: 0462995	Slope %	8
Topography	Gently sloping	Position	Middle slope
Parent material	Basalt	Surface stones	No
Drainage	Moderate	Human influence	Cultivation & grazing
Eff. Soil Depth, cm	>100	Surface cracks	No
Land cover	Cultivated	Land Use	Rainfed
Crop type	Barley & wheat	Soil unit	Pellic Vertisols

0-30 cm **10YR3/2(very dark greyish brown) moist; clay; moderately well drained; common fine and medium prominent black and red mottles; strong, medium to coarse, sub-angular blocky structured; sticky and plastic wet; many coarse and fine roots; common fine to medium pores; slow permeability; non calcareous; clear and smooth boundary.**

30-100 cm **10YR3/1 (very dark gray) moist; clay; moderately well drained; dominant fine and medium faint black and red mottles; moderate, medium to coarse, sub-angular blocky structured; friable moist, very sticky and very plastic when wet; very few and very fine pores; slow permeability.**

Remarks: Many deep gullies and rill erosion

Ambient Air Quality

Location : Derba town

Easting 37P 0461521; Northing UTM 1042800

Monitoring Date	Concentration, μg/m^3					
	Period, hrs	**PM10**	**SPM**	**SO_2**	**CO**	**NOx**
1	06:00-14:00			47.68	1222.31	9.29
	14:00-22:00			32.38	1384.58	9.83
	22:00-06:00			26.77	916.79	6.01
	24-Hrly. Mean	**30.04**	**185.2**	**35.32**	**1154.04**	**8.46**
2	06:00-14:00			15.59	1148.89	4.10
	14:00-22:00			26.31	1743.81	10.91
	22:00-06:00			15.34	670.97	3.81
	24-Hrly. Mean	**45.6**	**92.6**	**18.70**	**1163.40**	**5.98**
3	06:00-14:00			19.70	1424.10	7.66
	14:00-22:00			19.53	1492.00	7.09
	22:00-06:00			13.24	451.85	2.44
	24-Hrly. Mean	**50.5**	**100.9**	**18.02**	**1209.33**	**6.12**
4	06:00-14:00			19.81	1483.33	7.93
	14:00-22:00			21.68	1669.40	9.08
	22:00-06:00			16.52	1513.51	5.14
	24-Hrly. Mean	**47.8**	**96.7**	**18.86**	**1546.89**	**7.09**

Ambient Air Quality

Location: Plant site

Easting 37P 046223; Northing UTM 1047319

Monitoring Date	Pollutant Concentration, μg/m^3					
	Period, hrs	**PM10**	**SPM**	**SO_2**	**NO_2**	**CO**
1	06:00-14:00			16.02	839.69	3.17
	14:00-22:00			30.09	1600.35	7.69
	22:00-06:00			21.89	1318.89	6.08
	24-Hrly. Mean	**47.8**	**77.8**	**23.59**	**1299.17**	**5.92**
2	06:00-14:00			20.33	1162.62	8.18
	14:00-22:00			23.92	1743.89	10.34
	22:00-06:00			13.87	513.86	2.99
	24-Hrly. Mean	**57.9**	**69.44**	**18.79**	**1073.50**	**6.72**
3	06:00-14:00			21.45	1356.25	8.98
	14:00-22:00			21.01	1492.15	8.76
	22:00-06:00			14.57	904.14	3.65
	24-Hrly. Mean	**45.9**	**75.6**	**19.14**	**1265.89**	**7.09**
4	06:00-14:00			19.28	1276.86	5.48
	14:00-22:00			32.72	2168.17	10.10
	22:00-06:00			22.33	1127.01	8.26
	24-Hrly. Mean	**49.8**	**81.3**	**24.98**	**1557.80**	**7.92**

Ambient Air Quality

Location: Quarry site

Easting 37P 0455240; Northing UTM 1042800

Monitoring Date	Pollutant Concentration, μg/m^3					
	Period, hrs	**PM10**	**SPM**	**SO_2**	**NOx**	**CO**
1	06:00-14:00			30.87	2339.76	13.26
	14:00-22:00			17.88	1729.38	7.44
	22:00-06:00			19.31	1718.15	6.07
	24-Hrly. Mean	**60.5**	**89.4**	**23.57**	**1984.61**	**9.67**
2	06:00-14:00			27.91	2549.89	13.14
	14:00-22:00			22.46	1709.06	9.28
	22:00-06:00			18.14	1775.66	5.97
	24-Hrly. Mean	**49.7**	**85.6**	**22.63**	**1932.01**	**9.33**
3	06:00-14:00			29.14	2833.23	12.53
	14:00-22:00			24.59	1831.11	10.04
	22:00-06:00			18.24	1511.59	5.90
	24-Hrly. Mean	**51.2**	**87.7**	**23.43**	**1947.67**	**9.09**
4	06:00-14:00			29.95	3223.40	10.45
	14:00-22:00			27.01	2777.64	9.84
	22:00-06:00			27.25	2857.41	9.64
	24-Hrly. Mean	**55.9**	**92.8**	**27.95**	**2931.58**	**10.05**

Ambient Air Quality

Location: Lilo Chebeka

Easting 37P 0463278; Northing UTM 1037260

Monitoring Date	Pollutant Concentration, μg/m^3					
	Period, hrs	**PM10**	**SPM**	**SO_2**	**NOx**	**CO**
1	06:00-14:00			21.03	1085.08	8.37
	14:00-22:00			20.00	1266.00	7.04
	22:00-06:00			13.77	271.11	2.60
	24-Hrly. Mean	**12.4**	**33.1**	**18.29**	**865.67**	**6.00**
2	06:00-14:00			20.93	1265.93	8.47
	14:00-22:00			22.06	1525.97	8.66
	22:00-06:00			13.45	478.56	2.30
	24-Hrly. Mean	**18.9**	**40.3**	18.66	1073.75	6.47
3	06:00-14:00			21.39	1507.28	8.93
	14:00-22:00			15.88	1210.26	4.43
	22:00-06:00			13.86	702.03	2.55
	24-Hrly. Mean	**10.9**	**61.1**	**17.23**	**1141.64**	**5.45**
4	06:00-14:00			30.79	2363.41	7.93
	14:00-22:00			26.10	1898.89	11.54
	22:00-06:00			15.95	915.69	2.94
	24-Hrly. Mean	**11.3**	**35.6**	**24.05**	**1685.25**	**7.54**

Average Daily Traffic for Derba Junction - Derba road

Date	Description	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour	Day-Time (6 - 18)	Night - Time (18-21)	Total 24-Hour
		Car			Land rover			Small Bus			Large Bus			S/Trucks			M/Trucks			L/Trucks			T/Trailer		
19/08/2007		0		0	22	4	26	31	9	40	0		0	26	19	45	0	0	0	0	0	0	0	0	0
20/08/2007		0		0	20		20	14		14	0		0	9		9	5		5	0		0	0		0
21/08/2007		0		0	17		17	20		20	2		2	18		18	6		6	4		4	0		0
22/08/2007		0		0	23		23	17		17	0		0	4		4	3		3	5		5	0	0	0
23/08/2007		0	0	0	28	7	35	21	9	30	0	0	0	19	19	38	8	0	8	2	0	2	0	0	0
24/08/2007		0		0	14		14	11		11	0		0	14		14	8		8			0	0		0
25/08/2007		0		0	30		30	15		15	0		0	14		14	8		8	1		1	0	0	0
	Average (Total)	0	0	0	22	2	24	18	3	21	0	0	0	15	5	20	5	0	5	2	0	2	0	0	0
	Average 24 hr count	0	0	0	25	6	31	26	9	35	0	0	0	23	19	42	4	0	4	1	0	1	0	0	0
	24-hour Adj. factor	1.00			1.22			1.35			1.00			1.84			1.00			1.00			1.00		
	ADT	**0**			**27**			**25**			**0**			**27**			**5**			**2**			**0**		

COVER (%) OF THE SPECIES ENCOUNTERED ALONG THE DIFFERENT ALTITUDINAL RANGES

Species Name	Average elevation for plots (m above MSL)								
	1557	1647	1714	1840	1951	2134	2240	2351	2431
Acacia hockii	0	0	0	0	0	0	0	0	0
Acacia abyssinica	0	0	0	0	0	0	0	0	3
Acacia brevispica	0	0	0	0	0	0	0	3	0
Acacia ehrenbergiana	3	0	0	0	0	0	0	0	0
Acacia etbaica	0	3	0	0	0	0	0	0	0
Acacia gerrardi	25	5	0	0	1	0	0	0	0
Acacia torilis	14	0	0	0	0	0	0	0	0
Acacia etbaica	3	0	0	0	3	0	0	0	0
Acokanthera schimperi	1	1	0	0	0	0	0	0	0
Albizia gummifera	0	0	0	0	0	1	0	16	0
Alchemilla sp.	0	0	0	0	0	3	0	0	0
Aloe sp.	0	0	0	0	0	0	2	0	0
Asparagus africanus	0	1	0	0	0	0	0	0	0
Asparagus sp.	0	0	0	0	0	0	0	0	2
Balanites aegyptiaca	1	0	10	0	0	0	0	0	0
Cadaba farinosa	1	3	0	0	0	0	0	0	0
Calpurnia aurea	0	0	0	0	1	0	0	0	0
Calpurnia aurea	1	0	0	0	0	0	0	0	0
Calpurnia aurea	0	0	0	0	2	8	0	7	0
Capparis tomentosa	0	3	0	0	1	0	0	0	0
Carissa spinarum	0	0	0	0	0	0	0	0	20
Carissa spinarum	0	0	0	0	0	2	0	3	0
Carissa spinarum	0	0	0	0	0	0	2	20	0
Cissus rotundifolia	0	1	0	0	0	0	0	0	0
Clerodendrom myricoides	1	0	0	0	3	5	0	2	0
Clutia abyssinica	0	0	0	0	0	1	0	0	0
Combretum molle	1	3	0	0	7	0	1	0	0
Commicarpus grandiflorus	1	0	0	0	0	0	0	0	0
Commiphora schimperi	1	7	0	0	0	0	2	0	0
Crortom macrostachyus	0	3	0	0	0	0	0	0	2
Dichrostachys cinerea	0	0	0	0	0	3	0	0	0
Dodonaea angustifolia	0	0	0	0	30	0	0	0	0
Dodonaea angustifolia	0	0	0	0	0	0	0	6	0

COVER (%) OF THE SPECIES ENCOUNTERED ALONG THE DIFFERENT ALTITUDINAL RANGES

Species Name	Average elevation for plots (m above MSL)								
	1557	1647	1714	1840	1951	2134	2240	2351	2431
Dombeya torrida	0	1	0	0	0	0	0	0	0
Dovyalis abyssinica	0	0	0	0	0	0	0	0	1
Euclea racemosa	1	0	0	0	3	0	0	5	7
Euphorbia candelabrum	1	11	0	0	0	0	0	0	3
Euphorbia tirucalii	1	0	0	0	0	0	0	0	0
Ficus sur	0	1	0	0	0	0	0	0	0
Ficus vasta	0	0	0	40	0	0	0	0	0
Grewia ferruguinea	0	1	0	0	0	0	0	0	0
Helinus mystacinus	0	0	0	0	0	1	0	0	0
Heteromorpha trifoliata	0	0	0	0	0	0	0	7	0
Hibiscus micranthuis	0	1	0	0	0	0	0	0	1
Hibiscus sp.	0	0	0	0	0	1	0	0	0
Hypericum quartitianum	0	0	0	0	0	2	0	0	0
Impatiens tinctora	0	0	0	0	0	0	5	0	2
Jasminum floribundum	0	0	0	0	0	0	0	1	0
Kalanchoe sp.	0	0	0	0	0	0	2	0	0
Lannea sp.	0	3	0	0	0	0	0	0	2
Lantana trifolia	0	0	0	0	0	0	5	0	0
Lantana trifolia	0	0	0	0	0	0	0	2	0
Lippea adoensis	0	0	0	0	0	0	5	0	2
Maerua triphylla	1	1	0	0	0	0	0	0	0
Maytenus addat	0	0	0	0	0	0	0	1	0
Maytenus arbutifoilia	2	0	0	0	1	0	0	1	0
Ocimum gratissimum	0	0	0	0	0	0	3	0	0
Ocimum lamifolium	0	0	0	60	0	0	5	0	0
Olea europaea	0	0	0	0	0	0	1	0	0
Opuntia ficus indica	8	30	0	0	0	0	0	0	0
Osyris quadripartita	0	0	0	0	2	0	0	2	2
Otostegia integrifolia	0	0	0	0	0	0	4	0	0
Pavetta gardenifolia	0	0	0	0	0	0	0	0	0
Pentas lanceolata	0	0	0	0	2	0	0	0	0
Phyllanthes sepialis	0	0	0	0	0	1	0	0	0
Plectranthus sp.	0	0	0	0	0	0	0	0	1
Premna resinosa	0	0	0	0	2	0	0	0	0
Premna schimperi	0	0	0	0	0	0	0	3	0

COVER (%) OF THE SPECIES ENCOUNTERED ALONG THE DIFFERENT ALTITUDINAL RANGES

Species Name	Average elevation for plots (m above MSL)								
	1557	1647	1714	1840	1951	2134	2240	2351	2431
Pterolobium stellatum	0	0	0	0	0	0	0	3	0
Rhocissus tridentata	0	0	0	0	0	0	2	0	0
Rhus natalensis	3	0	0	0	0	0	0	2	0
Rhus retinnorhea	0	0	0	0	12	10	0	0	3
Rhus glutinosa	0	0	0	0	0	3	0	1	0
Rosa abyssinica	0	0	0	0	0	0	0	1	0
Rubus steudneri	0	0	0	0	0	0	0	0	0
Rumex nervosus	0	0	0	0	0	3	5	2	5
Salix subserrata	0	0	0	0	0	0	0	0	2
Scheffleria abyssinica	0	0	0	0	0	0	0	0	1
Schrebera alata	0	0	2	2	0	0	0	0	0
Senna singuinea	1	3	50	0	0	1	0	0	0
Steganotaenia araliaceae	0	0	0	0	0	0	0	6	0
Tagetes minuta	0	0	0	0	0	1	0	0	0
Trema guneensis	0	1	0	0	0	0	0	0	0
Ximenia americana	0	0	0	0	2	0	0	0	0

List of Plant Species Encountered in the Study Area

Sn	Species	Family
1	*Acacia hockii*	Fabaceae
2	*Acacia abyssinica*	Fabaceae
3	*Acacia amethiophylla*	Fabaceae
4	*Acacia brevispica*	Fabaceae
5	*Acacia brevispica*	Fabaceae
6	*Acacia burquqe*	Fabaceae
7	*Acacia decurrens*	Fabaceae
8	*Acacia ehrenbergiana*	Fabaceae
9	*Acacia etbaica*	Fabaceae
10	*Acacia gerrardi*	Fabaceae
11	*Acacia lahai*	Fabaceae
12	*Acacia melanoxylon*	Fabaceae
13	*Acacia nilotica*	Fabaceae
14	*Acacia persiflora*	Fabaceae
15	*Acacia senegal*	Fabaceae
16	*Acacia seyal*	Fabaceae
17	*Acacia sieberiana*	Fabaceae
18	*Acacia tortilis*	Fabaceae
19	*Acalypha sp.*	Euphorbiaceae
20	*Acanthus polystachius*	Acanthaceae
21	*Achyranthes aspera*	Amaranthaceae
22	*Acokanthera schimperi*	Apocynaceae
23	*Agave americana*	Agavaceae
24	*Agave sisaliana*	Agavaceae
25	*Agrocharis melanantha*	Apiaceae
26	*Albizia gummifera*	Fabaceae
27	*Alchemilla abyssinica*	Rosaceae
28	*Allium sativum*	Alliaceae
29	*Allium sepa*	Alliaceae
30	*Allophylus macrobotrys*	Sapindaceae
31	*Aloe sp.*	Aloaceae
32	*Apodytes dimidiata*	Iacinaceae
33	*Arisaema afromontanum*	Araceae
34	*Aristida adoensis*	Poaceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
35	*Artemisia abyssinica*	Asteraceae
36	*Artemisia sp.*	Asteraceae
37	*Arthraxon species*	Poaceae
38	*Arundo donax*	Poaceae
39	*Asparagus africanus*	Asparagaceae
40	*Aspilia mossambicensis*	Asteraceae
41	*Avena abyssinica*	Poaceae
42	*Balanites aegyptiaca*	Balanitaceae
43	*Berbeya oleoides*	Rubiaceae
44	*Bersama abyssinica*	Melianthaceae
45	*Bidens biternata*	Asteraceae
46	*Bidens pilosa*	Asteraceae
47	*Bouganvellia sp.*	Nyctaginaceae
48	*Brucea antidysentrica*	Simabouraceae
49	*Cadaba farinosa*	Capparidaceae
50	*Calpurnia aurea*	Fabaceae
51	*Capparis tomentosa*	Capparidaceae
52	*Cardiospermum helicacabum*	Sapindaceae
53	*Carduus pycnocephalus*	Asteraceae
54	*Carissa spinarum*	Apocynaceae
55	*Cartamus tinctoria*	Asteraceae
56	*Casuarina equisetifolia*	Casuarinaceae
57	*Chloris gayana*	Poaceae
58	*Ciser arietimum*	Fabaceae
59	*Cissus rotundifolia*	Vitaceae
60	*Clausenia anisata*	Rutaceae
61	*Clematis sinensis*	Ranunculaceae
62	*Clematis sp.*	Ranunculaceae
63	*Clerodendrum myricoides*	Lamiaceae
64	*Clutia abyssinica*	Euphorbiaceae
65	*Coccinia abyssinica*	Cucurbitaceae
66	*Combretum molle*	Combretaceae
67	*Commelina benghalensis*	Commelinaceae
68	*Commicarpus sinuatus*	Nyctaginaceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
69	*Commiphora schimperi*	Burseraceae
70	*Conyza sp.*	Asteraceae
71	*Corchorus olitorius*	Tiliaceae
72	*Cordia africana*	Boraginaceae
73	*Crotalaria laburnifolia*	Fabaceae
74	*Crotalaria sp.*	Fabaceae
75	*Croton dichrogamus*	Euphorbiaceae
76	*Croton macrostachyus*	Euphorbiaceae
77	*Cupressus lusitianica*	Cupressaceae
78	*Cyanotis barbatus*	Commelinaceae
79	*Cyperus rigidifolius*	Cyperaceae
80	*Datura strumarium*	Boraginaceae
81	*Dichrostachys cinerea*	Fabaceae
82	*Dodonaea angustifolia*	Sapindaceae
83	*Dombeya torrida*	Sterculiaceae
84	*Dovyalis abyssinica*	Flacourtiaceae
85	*Echinops longisetus*	Asteraceae
86	*Ekebergia capensis*	Meliaceae
87	*Embellia schimperi*	Myrsinaceae
88	*Epilobium hirustutum*	Onagaraceae
89	*Eragrostis teff*	Poaceae
90	*Eriosema scioanum*	Fabaceae
91	*Erythrina abyssinica*	Fabaceae
92	*Eucalyptus camaldulensis*	Myrtaceae
93	*Eucalyptus globulus*	Myrtaceae
94	*Eucalytus camaldulensis*	Myrtaceae
95	*Euclea racemosa ssp schimperi*	Ebenaceae
96	*Euphorbia abyssinica*	Euphorbiaceae
97	*Euphorbia candelabrum*	Euphorbiaceae
98	*Euphorbia dumalis*	Euphorbiaceae
99	*Euphorbia tirucalii*	Euphorbiaceae
100	*Ferula communis*	Apiaceae
101	*Ficus sur*	Moraceae
102	*Ficus sycomorus*	Moraceae
103	*Ficus thonningi*	Moraceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
104	*Ficus vasta*	Moraceae
105	*Galium sourium*	Rubiaceae
106	*Glycine sp*	Fabaceae
107	*Grevellia robusta*	Sapotaceae
108	*Grewia arborea*	Tiliaceae
109	*Grewia ferruguinea*	Tiliaceae
110	*Grewia flavescens*	Tiliaceae
111	*Grewia trichocarpa*	Tiliaceae
112	*Grewia velutina*	Tiliaceae
113	*Grewia villosa*	Tiliaceae
114	*Guizotia abyssinicum*	Asteraceae
115	*Hagenia abyssinica*	Rosaceae
116	*Helianthus anuus*	Asteraceae
117	*Helinus mystacinus*	Rhamnaceae
118	*Heliotropium sp.*	Boraginaceae
119	*Heteromorpha trifoliata*	Apiaceae
120	*Hibiscus micranthuis*	Malvaceae
121	*Hibiscus micranthus*	Malvaceae
122	*Hibiscus sp.*	Malvaceae
123	*Hordeum vulgare*	Poaceae
124	*Hypericum quartitianum*	Hypericaceae
125	*Hypericum revolutum*	Hypericaceae
126	*Ilex mitis*	Aquifoliaceae
127	*Impatiens rothii*	Balsaminaceae
128	*Ipomoea batatas*	Convolvulaceae
129	*Ipomoea kituiensis*	Convolvulaceae
130	*Jasminum grandiflorum*	Oleaceae
131	*Juniperus procera*	Cupressaceae
132	*Justicia flava*	Acanthaceae
133	*Justicia ladanoides*	Acanthaceae
134	*Justicia schimperiana*	Acanthaceae
135	*Kalanchoe sp.*	Crassulaceae
136	*Kleinia sp.*	Asteraceae
137	*Kniphofia sp*	Asphodelaceae
138	*Kniphofia sp.*	Asphodelaceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
139	*Lannea rivae*	Anacardiaceae
140	*Lannea schimperi*	Anacardiaceae
141	*Lannea sp.*	Anacardiaceae
142	*Lantana trifolia*	Verbenaceae
143	*Lens culinaris*	Fabaceae
144	*Lepisanthes senegalensis*	Sapindaceae
145	*Leucas martinicencis*	Lamiaceae
146	*Linum urtisssimum*	Linaceae
147	*Lippea adoensis*	Verbenaceae
148	*Lycopersicon sp*	Solanaceae
149	*Maerua angolensis*	Capparidaceae
150	*Maerua triphylla*	Capparidaceae
151	*Maesa lanceolata*	Myrsinaceae
152	*Maytenus arbutifoilia*	Celasteraceae
153	*Maytenus heteromorpha*	Celasteraceae
154	*Maytenus senegalensis*	Celasteraceae
155	*Milletia ferruguinea*	Fabaceae
156	*Musa paradisiaca*	Musaceae
157	*Myrica salicifolia*	Myricaceae
158	*Ochna inermis*	Ochnaceae
159	*Ocimum gratissimum*	Lamiaceae
160	*Ocimum lamiifolim*	Lamiaceae
161	*Olea europaea*	Oleaceae
162	*Opuntia ficus-indica*	Cactaceae
163	*Osyris quadripartita*	Santalaceae
164	*Otostegia integrifolia*	Acanthaceae
165	*Otostegia tomemtosa*	Acanthaceae
166	*Oxyanthes speciosus*	Rubiaceae
167	*Oxygonum sinuatum*	Polygonaceae
168	*Pappea capensis*	Sapindaceae
169	*Pavetta gardevifolia*	Rubiaceae
170	*Pavetta oliveriana*	Rubiaceae
171	*Pavoia sp.*	Malvaceae
172	*Pennisetum schimperi*	Poaceae
173	*Pennisetum villosum*	Poaceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
174	*Pentas lanceolata*	Rubiaceae
175	*Phalaris paradoxa*	Poaceae
176	*Phoenix reclinata*	Arecaceae
177	*Phyllanthes sepialis*	Euphorbiaceae
178	*Phytolacca dodocandera*	Phytolaccaceae
179	*Pilostigma thonningi*	Fabaceae
180	*Pisum sativum*	Fabaceae
181	*Pittosporum abyssinicum*	Pittosporaceae
182	*Plantago lanceolata*	Plantaginaceae
183	*Plectranthus sp.*	Lamiceae
184	*Plectranthus tenuifolius*	Lamiaceae
185	*Podocarpus falcatus*	Podocarpaceae
186	*Premna resinosa*	Lamiaceae
187	*Premna schimperi*	Lamiaceae
188	*Prunus africana*	Rosaceae
189	*Pterolobium stellatum*	Fabaceae
190	*Rhocissus tridentata*	Vitaceae
191	*Rhus natalensis*	Anacardiaceae
192	*Rhus retinnorhea*	Anacardiaceae
193	*Rhus ruspolli*	Anacardiaceae
194	*Rhus vulgaris*	Anacardiaceae
195	*Rhyncosia sp.*	Fabaceae
196	*Ricinus communis*	Euphorbiaceae
197	*Rosa abyssinica*	Rosaceae
198	*Rubus steudnerii*	Rosaceae
199	*Rumex abyssinicus*	Polygonaceae
200	*Rumex nervosus*	Polygonaceae
201	*Salix subserrata*	Salicaceae
202	*Scheffleria abyssinica*	Apiaceae
203	*Scheffleria volkensii*	Apiaceae
204	*Schinus molle*	Anacardiaceae
205	*Schrebera alata*	Oleaceae
206	*Senecio aegyptius*	Asteraceae
207	*Senecio myricocephalus*	Asteraceae
208	*Senecio schimperi*	Asteraceae

List of Plant Species Encountered in the Study Area

Sn	Species	Family
209	*Senna occidentalis*	Fabaceae
210	*Senna singuinea*	Fabaceae
211	*Sesamum orietale*	Pedaliaceae
212	*Sesbania sesban*	Fabaceae
213	*Solanum incanum*	Solanaceae
214	*Solanum marginatum*	Solanaceae
215	*Solanum nigrum*	Solanaceae
216	*Solanum somalense*	Solanaceae
217	*Solaum tuberosum*	Poaceae
218	*Sorghum bicolor*	Poaceae
219	*Steganotaenia araliacea*	Apiaceae
220	*Stephania abyssinica*	Menispermaceae
221	*Stereospermum kunthianum*	Bignoniacea
222	*Syzigium guineense*	Myrtaceae
223	*Tagetes minuta*	Asteraceae
224	*Themeda triandra*	Poaceae
225	*Trema guneensis*	Ulmaceae
226	*Trifolium sp.*	Fabaceae
227	*Trigonella foenicum-graecum*	Fabaceae
228	*Triticum aestivum*	Poaceae
229	*Uebelina abyssinica*	Caryophyllaceae
230	*Urtica simensis*	Urticaceae
231	*Verbascum sinauticum*	Lamiaceae
232	*Vernonia abyssinica*	Asteraceae
233	*Vernonia amygdalina*	Asteraceae
234	*Vernonia leopoldii*	Asteraceae
235	*Vernonia sp.*	Asteraceae
236	*Vicaria pyrimidata*	Cyperaceae
237	*Vicia benghalensis*	Fabaceae
238	*Vicia faba*	Fabaceae
239	*Ximenia americana*	Olaccacaceae
240	*Zea mays*	Poaceae
241	*Ziziphus mauritania*	Rhamnaceae

Wereda Level Questionnaire

Date:----------

1. Information about the Informant

Name of informant (interviewee)	Profession	Position (Responsibility)	Tele

2. Location

1. 1 Location	Name of the Region	Name of Zone	Name of the Wereda Administration	Name of the Capital of the Wereda

3. Population

Place	Number of Population			Number of Households		
	Male	Female	Total	Male	Female	Total
Urban						
Rural						
Total						

4. Family Size

3. Average family size	Urban	Rural	Wereda Average

5. Ethnic distribution in Percent

Place	Oromo	Amhara	Tigrawi	Others (specify)			Total
Urban							
Rural							
Total							

6 . Religious distribution in Percent

Place	Christians	Muslim	Traditional	Others (specify)			Total
Urban							
Rural							
Total							

7. Common types of marriage in Percent

Place	Monogamy	Polygamy	Total
Urban			
Rural			
Urban Rural Total			

8. Primary Occupation of the People in Percent

Place	Agriculture	Government Employee	Trade	Others (specify)			Total
Urban							
Rural							
Total							

9. Annual Income Level of the People

Place	Minimum (Birr)	Maximum (Birr)	Average (Birr)
Urban			
Rural			
Urban /Rural Average			

10. Rural Landholdings

Landholdings	Average (Hectare)	Maximum (Hectare)	Minimum (Hectare)

11. Existing land use pattern of the Wereda

Sn	Land Use	In Hectare		
		Urban	Rural	Total
1	*Farming Land*			
2	Grazing Land			
3	Residential Area			
4	Business Land			
5	Forest /Tree Land			
6	Governmental Free Land			
7	Bush and Shrub Lands			
8	Project lands			
	Others (Specify)			
	Total			

12.Quantity and Value of Agricultural Crops

Sn	Major Crops	Total Farming Area (Ha)	Total Production in Quintal	Total Value in Birr	Sn	Major Crops	Total Farming Area (Ha)	Total Production in Quintal	Total Value in Birr
I	**Cereals**				**II**	**Pulses**			
1	Teff				1	Chick Pea (Shimbra)			
2	Maize				2	Haricot Bean (Adenguare)			
3	Sorgum				3	Peas (Ater)			
4	Wheat (Sinde)				4	Bean (Bakela)			
5	Barley (Gebs)				5	Lentil (Misr)			
6	Millet (Dagusa)				6	Vetch (Guaya)			
7	Oats (Aja)				7	Ground Nuts (Lewz)			
8	Enset (Kotcho)				8	Taro (Godere)			
	Others				9	Others			
	Sub Total					**Sub Total**			
III	**Oilseeds**				**IV**	**Spices**			
1	Sesame (Selit)				1	Red Pepper			
2	Nug				2	Fenugreek (TikurAzmud)			
3	Linseed (Telba)					Others (specify)			
4	Sunflower (Suf)								
5	Rape Seed								
6	Ground nut								
7	Rape Seed (Gomen Zer)					**Sub Total**			
8	Others								
	Sub Total								
V	**Vegetables**								
1	Sweet potato (Siquar Dinch)								
2	Potato (Dinch)								
3	Cabbage								
4	Onion								
5	Garlic								
6	Others								
	Sub Total								
	Grand Total								

13. Fruit Bearing trees and Eucalyptus Grown in the Wereda

Sn	Major crops	Total Area Coverage (Ha)	Total Number	Total Production in Quintal	Total Value in Birr
	Fruit bearing Trees				
1	Banana				
2	Menderine				
3	Kok				
4	Orange				
5	Papaya				
6	Avocado				
7	Mango				
8	Coffee				
9	Chat				
10	Cotton				
	Others (Specify)				
	Sub Total				
	Eucalyptus				
	Grand total				

14 . How many times in a year do farmers of the Wereda harvest?

15 . Major constraints of crop production

Sn	Reasons	Relative Importance in percentage
1	Insufficient land holding	
2	Lack of improved farm implements	
3	Insufficient and uneven distribution of rainfall	
4	Inaccessible surface and ground water to irrigation	
5	Lack of agro-chemicals and fertilizer	
6	Lack of improved seed	
7	Weak agricultural extension services	
8	Loss of soil fertility	
9	Crop diseases and insects	
10	Weed infestation	
11	Lack of improved seed practices	
	Others	
	Total	**100%**

16 . Forest and Forest Land Loss

Sn	Description	Ha
I	**Available Forest Area**	
1	Natural Forest	
2	Community Forest	
3	Private Wood Lot	
4	Government Plantation	
5	Wood land	
6	National Forest Priority Areas	
	Others	
	Total	
II	**Forest Land Loss over Last 10 Years**	
1	Fire	
2	Fuel wood and Charcoal extraction	
3	Timber production	
4	Cultivation	
5	Settlement	
6	Others	
	Total	

17. Livestock Type and Population

Sn	Livestock	Number
1	Cattle (Oxen, Cows, Bulls, Calves)	
2	Sheep	
3	Goats	
4	Equines (Horse, Donkey, Mule)	
5	Poultry (Mainly Chicken)	
6	Beehives	
	Total	

18. What are the major Problems of cattle raising?

19. APICULTURE (BEE KEEPING) Production and Income

Apiculture Production	Quantity			Income		
	Urban	Rural	Total	Urban	Rural	Total
Number of Local Beehives in Wereda						
Number of Improved Beehives in Wereda						
Total						
Average Apiculture Products						
Honey in kg						
Wax in kg						
Propax in kg						
Others						
Total						

20. Literacy Rate of the Wereda

	Population (>10 yr.)	**Male Literacy Rate (%)**	**Female Literacy Rate (%)**	**Total Literacy Rate (%)**
Urban				
Rural				
Total				

21. Education (Schooling) of the Wereda

Sn	**Number of Schools**		**School Type**	**Number of Teachers**			**Number of Students**			**Average Year of Study**	**Dropout Rate (%)**
	Urban	**Rural**		**Male**	**Female**	**Total**	**Male**	**Female**	**Total**		
1			Primary School								
2			Secondary School								
3			Preparatory School								
4			College/University								
5			Farmer's Training Centre								
6			Vocational or Technical Training Center								
			Other:								
Total											

22. What are the reasons for Dropouts?

23.Water Supply

Source of Water Supply in %	Unit of Measurement	Urban	Rural	Urban Rural Total
% of HH with Water Harvesting in Underground Storage Tank	%			
% of HH with Piped Potable Water Supply	%			
% of HH from Wells	%			
% of HH from Rivers	%			
% of HH from Springs	%			
% of HH from Natural Ponds	%			
% of HH from Man-Made Ponds	%			
% of HH from other sources (specify :)	%			
Distance to Nearest Water Source - Dry Season	km			
Distance to Nearest Water Source - Wet Season	km			
Average Tariff for Potable Water	Birr/m^3			
Water Supply Coverage	%			

HH: Household

24. Sanitation

Sanitation %	Unit of Measurement	Urban	Rural	Urban Rural Total
% of HH without toilet	%			
% of HH with dry pit	%			
% of HH with toilet, water and septic tank	%			
% of HH connected to sewerage system draining to river	%			
% of HH connected to sewerage system coupled to treatment plant	%			
Tariff for Waste Water Disposal	Birr/m3			
Sanitation Coverage	%			

25. Roads

Road Classification	Total Length	
Dry-weather gravel road		km
All-weather gravel road		km
Asphalt road		km

26. Source of Income

Sn	Income Source	Number of People engaged		
		Urban	Rural	Total
1	Crop Sales			
2	Livestock and livestock products			
3	Honey			
4	Fish			
5	Forest product			
6	Family labor			
7	Handicraft			
8	Trade			
9	Animal rent			
10	Government			
11	Other Employments			
	Others			

27. Type of Institutions

Sn	Type of Institution	Number		
		Urban	Rural	Total
1	Farmer's service cooperatives			
2	Farmer's producer cooperatives			
3	Cooperative Unions			
4	Urban centered cooperatives			
5	Women associations			
6	Others:			

28. NGOs Operating in and Around the Project Area

Sn	Name of the Institution	Main Objective	Useful for Wereda	Start Year	End Year
1					
2					
3					
4					
5					

29. Post and Telecommunication

Type of the Service	Urban	Rural	Total
Postal Office			
Ordinary Telephone			
Satellite Telephone			
Ethiopian TV			
Satellite TV			
Internet Shops			
Radio Contact to State Capital			
Radio Contact to Addis			
Other			

30. Special Important Places

Are any monuments/sites of cultural, historical, religious, archaeological or recreation importance including wildlife sanctuaries, etc. likely to be affected by the project?

Sn	Name of the Site	Location Name of the Peasant Association	Usefulness of the Site
1			
2			
3			
4			
5			
6			
7			

31. Is there any government or public property/infrastructure around the Project Area?

Sn	Name of the Infrastructure	Type of Infrastructure	Location Name of the PA	Usefulness of the Site
1				
2				
3				
4				
5				
6				
7				

32. Details of existing development activities in the Project Area, (if there is any).

Sn	Name of the Activity	Type of Development Activities	Location Name of the PA	Usefulness of the Site
1				
2				
3				
4				
5				
6				

7				

33. Details of Planned development activities in the Project Area ,(if there is any).

Is there any government or public investment plan for the future in the area, which may be affected by the construction of the project? (If there is any please give details of the Wereda's future development plans).

Sn	Type of Planned Development Activities	Location Name	Usefulness of the Site
1			
2			
3			
4			
5			
6			
7			

34. What positive impacts on the area do you expect from the project?

_____

_____

_____

35. What negative impacts on the area do you expect from the project?

_____

_____

_____

36. What remedial measures do you recommend for the negative impacts of the project?

_____

_____

_____

37. Any Other comment if any

Kebele level Questionnaire

Date _____

ID Number | |

Name of the Kebele Peasant Association	_____	**Name of the Wereda**	_____

Name of the Respondent	_____

Responsibility of the Respondent	_____

1.Demographic Characteristics of Project Affected Kebele Peasant Association

Sn	Name of Villages	Population Number			Number of Household Heads			Number of Literate Population	
		Male	Female	Total	Male	Female	Total	Male	Female
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
	Total								

2. Livelihood and Economic Situation Of the Kebele Peasant Association

2.1 Land utilization pattern of the Kebele Peasant Association

Land Utilization in hectare					Total
Farming Lands	Grazing Lands	Residential Areas	Tree/ Forest lands	Others	Total

2.2 Primary Occupation of the Household Heads

Occupation	Number of Household Heads	Estimated Annual Income in Birr	
		Minimum	Average
Farming			
Factory worker			
Daily laborer			
Trade			
Handcraft			
Others			

2.3 Major types of crops produced in the area

Sn	Major Types of Crops	Yield per Hectare			Selling Price (Birr/ Quintal)		
		Average	Minimum	Maximum	Avg.	Min	Max

2.4 Major Constraints of Agricultural Production in the area

1. _____

2. _____

3. Number and types of livestock						
3.1 Number of livestock	**Cattle**	**Equine**	**Sheep/Goats**	**Poultry**	**Beehives**	**Others**

3.1.1 Please state the major constraint of livestock production

1. _____

2. _____

3.1.2 Please state the Development Activities with their short description, if any

Sn	Types of Development	Name of the Village	Benefits/Purpose
1			
2			
3			

3.1.3 Please state Development programs, if any

No.	Pland Activities	Year
1		
2		
3		

4. Water Ssupply					
4.1	Source of Water Supply	**Pipe Water**	**Protected Springs /Well**	**Unprotected Spring /Well**	**River/Lake /Pond**
4.2	Average round trip travel time	**Below one hour**	**1-2 hours**	**More than 2 hours**	

4.3 Please state major constraints of water supply

1. _____

2. _____

5. Social and Public Institutions and Infrastructures

5.1 Please state Social and Public Institutions and Infrastructure, if any

Sn	Institution/Infrastructures	Name of the location	Benefits/Purpose
1			
2			
3			

5.2 Please state Cultural, Historical, Religious, Archeological or tourism sites, if any

Sn	Type of the Place	Name of the location	Benefits
1			
2			
3			

6. Health and Education

6.1 What are the major health problems prevailing in the area?

1. _____

2. _____

6.2 What are the recently occurred epidemic diseases, if any?

1. _____

2. _____

6.3 Number of Schools in the Kebele Peasant Association

Number _____ Average Travel time _____

6.4 Number of Health Centers in the Kebele Peasant Association

Number _____ Average Travel time _____

7. What potential benefits do you expect from the project?

1. _____

2. _____

8. What potential negative impacts do you expect from the project?

1. _____

2. _____

9. What do you recommend to address the potential negative impacts of the project?

1. _____

2. _____

10. Any other Additional Comment

1. _____

2. _____

Household Level Questionnaire

Date _____

PAPIN ☐

Name of Household Head ----------

1 Location					
1.1 Administrative Location	Region	Zone	Wereda	PA	Village
1.2 Specific Location	Quarry Site ☐		Around Factory ☐		Within 10km radius ☐

2 Household Demographic Characteristic										
Age	Marital Status	Primary Occupation	Secondary Occupation	Religious	Education Level	Sex	Ethnic group	Family Size		
								Male	Female	Total

3. Education level greater than 5 years					
Literate attending School			Illiterate		
Male	Female	Total	Male	Female	Total

4. Type of Housing Units				
Main Houses	Kitchen	Guest House	Others	Animal Shed

5. Number of member household died & born in the last 12 months	Born	Died

6. Type and Number of Livestock						
6.1 Number of Livestock	Cattle	Equines	Sheep/goats	Poultry	Beehives	Others

Explain two major reasons for hindrances in livestock rearing

1. _____

2. _____

7. Size of land holding in hectare	Land Utilization in Hectare					Total
	Agriculture	Grazing	Residence	Trees	Others	

8. Agricultural Production

8.1 Average annual revenue of crop production

		Teff	Maize	Sorghu	Wheat	Barley	Mille	Chickpe a	Bean	Peas	Sesame	Nug	Peper	Onion	Potato	Others
8.1.1	*Cultivated land in hectare*															
8.1.2	Total production in quintal															
8.1.3	Average sales price per quintal (in Birr)															

8.2 What are the two major constraints in Agricultural Production?

1. _____
2. _____

9. Trees Production

9.1 Type and number of tree

	Banana	Menderine	Kok	Orange	Papaya	Avocado	Mango	Coffee	Cha t	Eucaly ptus
Number										
Production										
Income										

9.2 Explain two major constraints for trees production

1. _____
2. _____

0. Water Supply

10.1	Main sources of household water supply	Pipe	Protected well or spring	Unprotected well or spring	River lake/ pond

10.2	Time to collect water (one-way walking distance)	< 1 hour	1 hour to 2 hour	> 2 hour

10.3 Explain two major problems, which you face in the water supply

1. _____
2. _____

11. **Sanitation/ human waste disposal**	**Pour flush toilet/ pit latrine**	**Fields/ corner of compound**

12. Household: Economic Activities – Distribution of tasks

Sn	Activity	Only by men	Only by Women	Only by children	By all family members	Hired labour
1	Land preparation					
2	Ploughing					
3	Seed Sowing					
4	Crop harvesting					
5	Hoeing/ weeding					
6	Threshing/ Shelling crops					
7	Fodder collection					
8	Livestock stall feeding & grazing					
9	Cleaning of Livestock sheds					
10	Milking animals					
11	Poultry management					
12	Fetching water for household use					
13	Fuel gathering					
14	Marketing agricultural products					
15	Marking household items					
16	Trading					
17	Preparing food					
18	Caring for children					
	Others					

13. List of and Type of Food the Household Consumed/ Annual Consumption

Crop	Meat			Animal Products				Vegtables	Fruits
	Poultry	Sheep/ Goat	Cow/ Ox	Butter	Milk	Chese			

14. Is there shortage of food in the household?	Yes ☐	No ☐

15. Household: Income and Annual Amounts

Sn			Sn		
I.	**Livestock & Agriculture**		**II.**	**Off-farm Activates**	
1.1	*Crop (Grain & Vegetables)*		2.1	Governmental permanent employment of family members	
1.2	Perennial crops		2.2	Labour of family members	
1.3	Life Animal		2.3	Handicraft/ trade of family members	
1.4	Animal products/ by products		2.4		
1.5	Agro-forestry products (including firewood charcoal)			Others	
1.6	Land Rent/ lease out				
1.7	Petty trading				
	Others		**III.**	**Other Sources**	
			3.1	Financial support by family member and relatives	
			3.2	Pension	
				Others	

16. Household: Expenditures – Annual Amounts

List of Expenditure	Average annual expenditure (in Birr)		Average annual expenditure (in Birr)
I. I Personal Requirements		**II. Agricultures & Livestock**	
1.1 Consumables		2.1 Farm tools	
1.2 Human medical cares		2.2 Farm inputs	
1.3 Education		2.3 Hiring labour	
1.4 Clothing		2.4 Land Rent	
1.5 House maintenance/ building		2.5 Food livestock	
1.6 Energy		2.6 Animal Health	
1.7 Water		2.7 Buying Animals	
1.8 Transport		Others	
Others			
III. Financial Matters		**IV. Cultural Events**	
3.1 Taxes		4.1 Social/ Religious Ceremonies	
3.2 Debt Repayment		Others	
3.3 Saving			
Others			

17. What positive impacts do you expect from the project

1. _____

2. _____

18. What negative impacts do you expect from the project

1. _____

2. _____

19. What measures do you suggest should be taken to mitigate the negative impact of the project

1. _____

2. _____

20. Any additional suggestion

1 _____

2 _____

Annual Minimum Income of the Households

Id No	PA	Minimum Income from the Primary Jobs (Birr/HHH)						
		Farming	Factory/ Govt Employee	Daily Laborers	Trade	Handcrafts	Others	Total
1	Becho Kidane Mehret	670	5,310	4,100	5,000	5,000	-	20,080
2	Handa Weizero	10,000	8,000	3,600	5,000	4,200	-	30,800
3	Ada Ginbichu	3,000	-	1,800	1,800	1,600	-	8,200
4	Gorfo	5,000	4,500	96	9,500	-	-	19,096
5	Beku Golba	2,450	2,640	1,152	1,400	450	-	8,092
6	Lilo Chebeka	10,000	-	-	-	-	-	10,000
7	Derba Gulele Beresa	610	6,490	3,600	5,000	2,500	-	18,200
8	Eko Efo Babo	2,000	-	500	1,000	700	-	4,200
9	Amuma Bebisa Dunburi	4,000	-	-	-	1,500	-	5,500
10	Mulo Fale	10,000	-	100	600	500	-	11,200
11	Bole Becho	3,500	-	-	-	600	-	4,100
12	Becho Faneli	4,500	-	-	-	-	-	4,500
13	Nono	4,500	-	-	-	-	-	4,500
14	Arere	450	-	900	-	1,600	-	2,950
15	Gobolana katila	4,000	-	-	-	-	-	4,000
16	Goda Jaba	3,000	-	-	-	-	-	3,000
17	Gyna Sole	500	-	800	700	1,500	-	3,500
18	Kuchuna Tengego	4,760	-	-	-	-	-	4,760
19	Guyamana Kuwat	800	-	-	-	-	-	800
20	Sole Gibe	15,000	-	7,500	6,000	4,000	-	32,500
21	Dede Diftu	3,000	-	-	-	-	-	3,000
22	Yasa Gode Wereke	-	-	-	-	-	-	-
23	Kerkerecha	3,000	4,000	400	500	1,000	-	8,900
24	Elu Keteba	7,000	6,000	300	400	1,500	-	15,200
25	Elu Tosigne	1,000	-	-	-	-	-	1,000
26	Dire Medale	500	-	-	-	-	-	500
27	Elu Werebo	570	-	50	150	-	-	770
28	Debisa Agasa	350	-	460	890	780	-	2,480
	Average	**3,720**	**1,319**	**906**	**1,355**	**980**	**-**	**8,280**

Annex 4.13
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Annual Maximum Income of the Households

Id No	PA	Minimum Income from the Primary Jobs (Birr/HHH)						
		Farming	Factory/Govt Employee	Daily Labourers	Trade	Handcrafts	Others	Total
1	Becho Kidane Mehret	2,600	14,684	13,580	49,337	6,500	-	86,701
2	Handa Weizero	16,900	17,000	5,200	8,000	6,800	-	53,900
3	Ada Ginbichu	9,000	-	2,880	3,600	4,320	-	19,800
4	Gorfo	10,000	9,000	180	15,000	-	-	34,180
5	Beku Golba	8,940	3,120	1,440	2,120	570	-	16,190
6	Lilo Chebeka	15,000	-	-	-	-	-	15,000
7	Derba Gulele Beresa	3,270	15,340	12,400	65,000	6,000	-	102,010
8	Eko Efo Babo	4,000	-	700	1,500	900	-	7,100
9	Amuma Bebisa Dunburi	9,000	-	-	-	2,000	-	11,000
10	Mulo Fale	30,000	-	500	12,000	1,000	-	43,500
11	Bole Becho	6,500	-	-	-	980	-	7,480
12	Becho Faneli	5,650	-	-	-	-	-	5,650
13	Nono	5,450	-	-	-	-	-	5,450
14	Arere	900	-	1,200	-	2,500	-	4,600
15	Gobolana katila	15,000	-	-	-	-	-	15,000
16	Goda Jaba	5,000	-	-	-	-	-	5,000
17	Gyna Sole	2,000	-	2,400	4,000	3,500	-	11,900
18	Kuchuna Tengego	17,335	-	-	-	-	-	17,335
19	Guyamana Kuwat	2,000	-	-	-	-	-	2,000
20	Sole Gibe	20,000	-	-	8,000	5,000	-	33,000
21	Dede Diftu	10,000	-	-	-	-	-	10,000
22	Yasa Gode Wereke	9,455	2,816	1,928	8,027	1,908	-	24,133
23	Kerkerecha	5,000	7,000	50-45	3,000	5,000	-	20,000
24	Elu Keteba	12,000	12,000	700	8,000	10,000	-	42,700
25	Elu Tosigne	10,000	-	-	-	-	-	10,000
26	Dire Medale	7,550	-	-	-	-	-	7,550
27	Elu Werebo	8,530	-	830	3,400	1,500	-	14,260
28	Debisa Agasa	25,000	-	5,200	6,800	5,000	-	42,000
	Average	**9,860**	**2,891**	**1,820**	**7,064**	**2,267**	**-**	**23,837**

Average Yield of Crops

Id No	PA	Maximum Yield of Crops Grown (Qt/ha)								
		Teff	Maize	Sorghum	Wheat	Barley	Chickpeas	Bean	Peas	Nug
1	Becho Kidane Mehret	13.0	18.3	21.0	28.3	18.0		16.0	13.0	7.0
2	Handa Weizero	7.3	9.0	16.3						
3	Ada Ginbichu	7.0	20.5	17.0			4.0			2.5
4	Gorfo	11.0		10.7	13.3	11.7		8.0	4.3	
5	Beku Golba	4.8		6.0	3.5	4.3		3.0		
6	Lilo Chebeka	6.0		12.0	11.0	8.0				3.3
7	Derba Gulele Beresa			22.0	26.0	21.0	8.0	14.0	12.0	8.0
8	Eko Efo Babo	4.7		7.0	6.3	5.7		4.0		
9	Amuma Bebisa Dunburi	5.0		5.0	7.0	6.0		6.0		2.0
10	Mulo Fale	3.3	5.8	3.0	4.7	7.0	4.7	4.7	3.7	
11	Bole Becho	3.0			4.0	3.5	3.0	4.0	4.0	
12	Becho Faneli	4.0	5.0	5.0						
13	Nono	3.3			6.3	6.3		5.3	5.0	
14	Arere	13.3	23.3	23.3						
15	Gobolana katila	9.0			10.5		10.0	6.0		
16	Goda Jaba	6.0	6.5	6.0						
17	Gyna Sole	10.7			18.3			5.7	5.7	
18	Kuchuna Tengego	12.0			12.0		14.0	12.5	8.8	
19	Guyamana Kuwat	4.0	6.0	6.0	2.7					
20	Sole Gibe	10.0	18.0	37.3						
21	Dede Diftu	4.5	5.0	5.0			3.0			
22	Yasa Gode Wereke	2.5	3.5	4.5						
23	Kerkerecha	6.3	20.0	10.0	4.7		7.0	4.7		
24	Elu Keteba	4.0	10.0	8.7	8.3	6.7		6.0	5.3	
25	Elu Tosigne	5.0	5.0	8.0	6.0			7.0	7.0	
26	Dire Medale	2.5	3.3	3.0				0.6	0.7	
27	Elu Werebo	4.3	5.5	8.0	2.2	4.2	0.7	3.6	1.0	0.3
28	Debisa Agasa	6.3		9.3	7.0				4.0	
	Median	5.0	6.3	8.0	7.0	6.5	4.7	5.7	5.0	2.9

Average Selling Price of Crops

Id No	PA	Average Selling of Crops Grown (Birr/Qt)									
		Teff	Maize	Sorghum	Wheat	Barley	Chickpeas	Bean	Peas	Sesame	Nug
1	Becho Kidane Mehret	380	225	195	285	280		390	400		595
2	Handa Weizero	433	250	277							
3	Ada Ginbichu	425	173	225			375				
4	Gorfo	420		260	300	280		197			
5	Beku Golba	407		207	325	277		383			560
6	Lilo Chebeka	260		193	243	243					217
7	Derba Gulele Beresa			270	270	1,260	490	425	425		590
8	Eko Efo Babo	410		223	447	260		457			
9	Amuma Bebisa Dunburi	375		250	290	250		375			400
10	Mulo Fale	375	150	250	280	250	400	375	375		
11	Bole Becho	450			400	380	400	420	480		
12	Becho Faneli	450	173	300							
13	Nono	400		250	350			350	367		
14	Arere	323	123	123							
15	Gobolana katila										
16	Goda Jaba	450	170	215							
17	Gyna Sole	400			317			400	400		
18	Kuchuna Tengego	365			365		380	370	450		
19	Guyamana Kuwat	283	75	75	383						
20	Sole Gibe	433	110	245							
21	Dede Diftu	350	137	137			350				
22	Yasa Gode Wereke	441	200	224							
23	Kerkerecha	400	160	193	360		410	310			
24	Elu Keteba	400	163	200	320	183		207	400		
25	Elu Tosigne	410	180	190	225			410		183	
26	Dire Medale	260	180	190				410	410		
27	Elu Werebo			133							
28	Debisa Agasa	412		190	330				337		
	Median	**400**	**170**	**211**	**320**	**268**	**400**	**383**	**400**	**183**	**560**

Population of the Buffer Zone

Id No	Wereda	PA	Sub PA	Population Number			HHH Number		
				Male	Female	Total	Male	Female	Total
1	Sululeta	Becho Kidane Mehret	Abale	80	160	240	24	6	30
2	Sululeta	Becho Kidane Mehret	Abale	101	74	175	33	2	35
3	Sululeta	Becho Kidane Mehret	Abale	67	77	144	20	4	24
4	Sululeta	Becho Kidane Mehret	Abale	69	66	135	24	3	27
5	Sululeta	Becho Kidane Mehret	Abale	69	106	175	24	1	25
6	Sululeta	Becho Kidane Mehret	Abale	135	63	198	24		24
7	Sululeta	Becho Kidane Mehret	Becho K/Mihret	79	96	175	35		35
8	Sululeta	Becho Kidane Mehret	Becho K/Mihret	88	98	186	29	2	31
9	Sululeta	Becho Kidane Mehret	Dibdbe	53	75	128	32		32
10	Sululeta	Becho Kidane Mehret	Dibdbe	63	57	120	24		24
			Sub Total	804	872	1,676	269	18	287
2	Sululeta	Handa Weizero	Muger	312	512	824	175	72	247
13	Sululeta	Handa Weizero	Wozero	367	477	844	190	69	259
14	Sululeta	Handa Weizero	Botoro	212	622	834	149	94	243
15	Sululeta	Heyil Wozaro	Sub Total	891	1,611	2,502	514	235	749
3	Sululeta	Ada Gibmchu	Koticha	200	274	474	107	108	215
17	Sululeta	Ada Gibmchu	Koticha	150	200	350	170	163	333
18	Sululeta	Ada Gibmchu	Gmbichu	221	253	474	106	100	206
19	Sululeta	Ada Gibmchu	Koticha	270	263	533	68	70	138
21	Sululeta	Ada Gibmchu	Gemebichu	215	256	471	60	54	114
22	Sululeta	Ada Gibmchu	Koticha	193	200	393	40	35	75
23	Sululeta	Ada Gibmchu	Koticha	69	74	143	25	26	51
24		Ada Gibmchu	Sub Total	1,318	1,520	2,838	576	556	1,132
	Sululeta	Gorfo	A/Diriba	769	460	1,229	190	30	220
	Sululeta	Gorfo	Elemu Hebenu	684	406	1,090	160	35	195
			Sub Total	1,453	866	2,319	350	65	415
	Sululeta	Beku Golba	Boku Huruta(8)	1,268	1,468	2,736	104	56	160
			Sub Total	1,268	1,468	2,736	104	56	160
6	Sululeta	Lilo Chebeka	Lilo	888	913	1,801	200	57	257
	Sululeta	Lilo Chebeka	Chebeka	504	511	1,015	170	40	210
			Sub Total	1,392	1,424	2,816	370	97	467
7	Sululeta	Derba Gulele Beresa	Gulelle	410	460	870	299	27	326
	Sululeta	Derba Gulele Beresa	Dereba	1,001	1,099	2,100	508	48	556
	Sululeta	Derba Gulele Beresa	Beresa	414	506	920	354	32	386
			Sub Total	1,825	2,065	3,890	1,161	107	1,268
8	Sululeta	Eko Efo Babo	Wegdi	524	430	954	287	253	540
			Sub Total	524	430	954	287	253	540
9	Mullo	Amuma Bebisa Dunburi	Amuma	520	614	1,134	141	20	161
	Mulo	Amuma Bebisa Dunburi	Bubisa	518	600	1,118	145	28	173
			Sub Total	1,038	1,214	2,252	286	48	334
	Mulo	Mulo Fale	Tachignaw kadida	800	600	1,400	169	30	199

Population of the Buffer Zone

Id No	Wereda	PA	Sub PA	Population Number			HHH Number		
				Male	Female	Total	Male	Female	Total
			Sub Total	800	600	1,400	169	30	199
11	Wuchale	Bole Becho	Becho Guranda	780	850	1,630	310	95	405
	Wuchale	Bole Becho	Bole Gendemira	590	525	1,115	270	60	330
			Sub Total	1,370	1,375	2,745	580	155	735
12	Wuchale	Becho Faneli	Becho Fenili	785	865	1,650	110	50	160
	Wuchale	Becho Faneli	Becho Fenili	575	535	1,110	300	60	360
			Sub Total	1,360	1,400	2,760	410	110	520
13	Wuchale	Nono	Nono Bole	770	690	1,460	317	65	382
	Wuchale	Nono	Nono Kore	920	880	1,800	300	63	363
			Sub Total	1,690	1,570	3,260	617	128	745
14	Yaya Gulelle	Arere	Arere	136	156	292	56	17	73
	Yaya Gulelle	Arere	Arere	102	218	320	44	5	49
	Yaya Gulelle	Arere	Arere	115	209	324	61	14	75
	Yaya Gulelle	Arere	Arere	176	188	364	43	19	62
			Sub Total	529	771	1,300	204	55	259
	Yaya Gulelle	Gobolana katila	katla	119	121	240	40	8	48
			Sub Total	119	121	240	40	8	48
16	Yaya Gulelle	Goda Jaba	Kawa (Babona Temami	405	235	640	108	20	128
	Yaya Gulelle	Goda Jaba	Goda Jabo(Gode Shmode)	165	175	340	52	14	66
	Yaya Gulelle	Goda Jaba	Goro Welu	300	325	625	100	25	125
	Yaya Gulelle	Goda Jaba	Fenehe (Felete Bederu)	135	170	305	57	4	61
			Sub Total	1,005	905	1,910	317	63	380
17	Yaya Gulelle	Gyna Sole	Gnea Kothemi	439	385	824	78	2	80
	Yaya Gulelle	Gyna Sole	Gnea Midina	554	468	1,022	25	4	29
	Yaya Gulelle	Gyna Sole	Gnea Kulu	476	400	876	37	7	44
	Yaya Gulelle	Gyna Sole	Gnea Gnea	418	387	805	46	5	51
	Yaya Gulelle	Gyna Sole	Sale /Demo	370	319	689	76	3	79
	Yaya Gulelle	Gyna Sole	Sale Kele	481	495	976	68	4	72
	Yaya Gulelle	Gyna Sole	Sale Alelletu	502	468	970	51	1	52
	Yaya Gulelle	Gyna Sole	Sale Geraneche	352	416	768	56	4	60
			Sub Total	3,592	3,338	6,930	437	30	467
	Yaya Gulelle	Kuchuna Tengego	Bureka Jebi	100	128	228	31	7	38
	Yaya Gulelle	Kuchuna Tengego	Gunufata	115	95	210	32	3	35
	Yaya Gulelle	Kuchuna Tengego	ThenesaSub Kebele	163	140	303	46	5	51
	Yaya Gulelle	Kuchuna Tengego	Bachu	275	290	565	85	10	95
	Yaya Gulelle	Kuchuna Tengego	Arere	105	111	216	32	4	36
	Yaya Gulelle	Kuchuna Tengego	Thenegasa	225	183	408	58	10	68
			Sub Total	983	947	1,930	284	39	323
19	Yaya Gulelle	Guyamana Kuwat	Toke (Libo)	535	235	770	72	72	144
	Yaya Gulelle	Guyamana Kuwat	Dimo(Chafeabeche)	333	147	480	48	48	96

Population of the Buffer Zone

Id No	Wereda	PA	Sub PA	Population Number			HHH Number		
				Male	Female	Total	Male	Female	Total
	Yaya Gulelle	Guyamana Kuwat	Kuwat(TuluAbecha)	385	575	960	96	96	192
	Yaya Gulelle	Guyamana Kuwat	Baneda Jale	450	320	770	72	72	144
	Yaya Gulelle	Guyamana Kuwat	Jewi	450	150	600	60	60	120
	Yaya Gulelle	Guyamana Kuwat	Gome	305	215	520	52	52	104
	Yaya Gulelle	Guyamana Kuwat	marare	455	315	770	72	72	144
	Yaya Gulelle	Guyamana Kuwat	Golebe Shekeke	411	479	890	84	84	168
			Sub Total	3,324	2,436	5,760	556	556	1,112
20	Yaya Gulelle	Sole Gibe	Gurecha	143	108	251	27	8	35
	Yaya Gulelle	Sole Gibe	Mukereba	92	46	138	17	2	19
	Yaya Gulelle	Sole Gibe	Shebole	64	35	99	19	3	22
	Yaya Gulelle	Sole Gibe	Muthe	88	72	160	23	8	31
	Yaya Gulelle	Sole Gibe	Sole	245	185	430	84	6	90
	Yaya Gulelle	Sole Gibe	Gibe	185	127	312	72	9	81
			Sub Total	817	573	1,390	242	36	278
21	Yaya Gulelle	Dede Diftu	Dede	265	255	520	96	72	168
	Yaya Gulelle	Dede Diftu	Dufetu	216	97	313	24	11	35
	Yaya Gulelle	Dede Diftu	Keraru	230	170	400	44	42	86
	Yaya Gulelle	Dede Diftu	Muthe	276	320	596	84	47	131
			Sub Total	987	842	1,829	248	172	420
22	Yaya Gulelle	Yasa Gode Wereke	Tamane	200	198	398	69	10	79
	Yaya Gulelle	Yasa Gode Wereke	Gode Becho	188	183	371	78	9	87
	Yaya Gulelle	Yasa Gode Wereke	Gobola	156	136	292	52	8	60
	Yaya Gulelle	Yasa Gode Wereke	Gocho	144	152	296	52	8	60
	Yaya Gulelle	Yasa Gode Wereke	Meleke Gogesa	145	89	234	53	2	55
	Yaya Gulelle	Yasa Gode Wereke	Yasa	114	111	225	52	8	60
	Yaya Gulelle	Yasa Gode Wereke	Seyo	140	109	249	54	6	60
	Yaya Gulelle	Yasa Gode Wereke	Edeno	120	127	247	47	9	56
			Sub Total	1,207	1,105	2,312	457	60	517
23	Adea Bergqa	Kerkerecha	Equye	1,211	1,300	2,511	242	10	252
	Adea Bergqa	Kerkerecha	Equye	820	530	1,350	148	20	168
			Sub Total	2,031	1,830	3,861	390	30	420
24	Adea Bergqa	Elu Keteba	Ilu Keteba (Aredu(6))	955	1,785	2,740	200	10	210
	Adea Bergqa	Elu Keteba	Ilu Keteba (Ketebo(4))	573	1,071	1,644	49	15	64
	Adea Bergqa	Elu Keteba	Ilu Keteba (Dedemetu(3))	382	714	1,096	150	15	165
			Sub Total	1,910	3,570	5,480	399	40	439
25	Adea Bergqa	Elu Tosigne	Weged	215	213	428	58	14	72
	Adea Bergqa	Elu Tosigne	Teletele	212	208	420	12	12	24

Population of the Buffer Zone

Id No	Wereda	PA	Sub PA	Population Number			HHH Number		
				Male	Female	Total	Male	Female	Total
	Adea Bergqa	Elu Tosigne	Ejeresa Aware	210	207	417	57	16	73
	Adea Bergqa	Elu Tosigne	Hulenecha	211	209	420	55	13	68
	Adea Bergqa	Elu Tosigne	Bole	214	212	426	60	18	78
	Adea Bergqa	Elu Tosigne	Delefetu	212	210	422	56	15	71
	Adea Bergqa	Elu Tosigne	Thosegne	209	206	415	45	13	58
	Adea Bergqa	Elu Tosigne	Ekuyuna Koreanetuta	216	214	430	62	17	79
			Sub Total	1,699	1,679	3,378	405	118	523
	Adea Bergqa	Dire Medale	Chefene Medele	130	125	255	40	8	48
			Sub Total	130	125	255	40	8	48
27	Adea Bergqa	Elu Werebo	Ilu Werebo	746	588	1,334	187	23	210
			Sub Total	746	588	1,334	187	23	210
28	Adea Bergqa	Debisa Agasa	Ilu Agasa	1,696	1,802	3,498	490	40	530
	Adea Bergqa	Debisa Agasa	Ilu Debisa	1,296	1,377	2,673	363	42	405
			Sub Total	2,992	3,179	6,171	853	82	935
			Grand Total	37,804	38,424	76,228	10,752	3,178	13,930