

Appendix D. Catchment Characteristics

The following soil characteristics are summarised from Landcare Research's web page <http://smap.landcareresearch.co.nz/glossary>.

D.1 Potential Rooting Depth

Potential rooting depth describes the depth of soil that a plant can exploit water from. Such a layer may be defined by penetration resistance, poor aeration or very low available water capacity. In soil with a deep potential rooting depth, some grass roots will penetrate to over 100 cm deep. When plants extract water and nutrients from deep in the soil, they are more resistant to drought and hence require less irrigation water and the soil is less prone to leaching.

Potential rooting depth classes are described fully in Webb and Wilson (1995) and are as summarised in **Table D.1**

Table D-1. Potential rooting depth classes (m).

Depth profile	Min	Max
Very shallow	0.15	0.24
Shallow	0.25	0.44
Slightly deep	0.45	0.59
Moderately deep	0.6	0.89
Deep	0.9	1.19
Very deep	1.2	1.5

D.2 Plant Available Water (PAW)

Plant available water (PAW) is the amount of water potentially available to plant growth that can be stored in the soil to a depth of 100 cm, or to the potential rooting depth (whichever is the lesser). PAW takes into account variations in soil horizons and is expressed in units of millimetres of water, i.e. in the same way as rainfall. A PAW of 100 mm implies that 10% of the soil volume is water available to plants. **Table D-2** outlines PAW classes utilised for this study (extracted from the fundamental soils layer).

Plants can only extract water where roots can grow. Thus, where a root barrier occurs within 100 cm, the PAW reported will be the PAW to the root barrier. It is important to recognise that PAW is a potential value and not all the water is equally available. For example, as the soil dries out the water becomes more difficult to extract. As a general 'rule of thumb', plant growth will begin to slow down when 50% of PAW has been extracted. In the case of shallow rooting crops (e.g. potatoes) PAW is characterised as the available water to the maximum rooting depth.

Table D-2. Pant available water classes (mm).

Depth profile	Min	Max
Very low	0	29
Low	30	59
Moderate	60	89
Moderately high	90	149
High	150	249
Very high	250	350

D.3 Depth to Slow Permeable Horizon

Depth to a slowly permeable horizon describes the minimum and maximum depths (in metres) to a horizon where the permeability is less than 4 mm/hr as measured by techniques outlined in Griffiths (1985). **Table D-3** summarises the depth for each class defined by techniques outlined in Griffiths (1985). If no slowly permeable horizon is observed, the taxon is allocated to Class 6.

Table D-3. Depth to slow permeable horizon (mm).

Class	Min	Max
1	0	0.44
2	0.45	0.59
3	0.60	0.89
4	0.90	1.19
5	1.20	1.49
6	Not encountered	

D.4 Drainage Class

Soil drainage class is a classification that indicates how wet a soil is likely to be under high rainfall conditions. Well-drained soils allow water to drain through the profile in all periods of the year. Poorly drained soils either have a water table close to the surface, or a compact subsurface layer that limits the rate that water can drain through the soil. Imperfectly drained soils are in an intermediate condition between well-drained and poorly drained.

Drainage classes are assessed using criteria of soil depth and duration of water tables inferred from soil colours and mottles, or from reference to diagnostic horizons, as described in **Table D-4**. Drainage classes used here are the same as those used in the NZ Soil Classification (Hewitt, 1993) and outlined by Milne *et. al.* (1995).

Table D-4. Soil drainage classes.

Class	Description	Water table depth below A horizon	Compacted subsurface depth	Low chroma on ped or cut surfaces	High Chroma redox mottles
		(cm)	(cm)	(%)	(%)
1	Very poor	1	≤10	≥50	
2	Poor	≤15	≤30	≥50	
3	Imperfect	≤15	≤30	≤50	and/or ≥2
		>15	30–90	≥50	
4	Moderately well		30–90		≥2
			60–90	≥50	
5	Well		>90		<2

D.5 Permeability

Permeability is the rate that water moves through saturated soil and hence defines the ability of a soil to drain (regardless of external influences on water tables, e.g. being low-lying in the landscape). The permeability of a soil profile is affected by texture, structure and soil density and is related to potential rooting depth, depth to a slowly permeable horizon and internal soil drainage. Permeability of a soil profile is often expressed as two values such as ‘moderate over slow’. This is where a layer of moderate-draining soil sits above a layer of slow-draining soil. Permeability of a profile under extended rainfall conditions is governed by the permeability of the layer that is most slowly permeable. Permeability classes and their equivalent flow rates (mm/h) from Clayden and Webb (1994) are as shown in **Table D-5**.

Table D-5. Soil permeability classes.

Class	Rate (mm/hr)
Slow	< 4
Moderate	4-72
High	> 72

D.6 Calculated Statistics

An overview of the sub-catchment average statistics for area, slope, elevation, depth to groundwater, permeability, and geology for each SOURCE model sub-catchment are provided in **Table D-6** and

Table D-7 for the Kaituna and Rangitāiki WMAs respectively.

The sub catchment area, mean slope, and mean elevation for the Kaituna and Rangitāiki WMAs were calculated from the LINZ 15 m Digital Elevation Model using QGIS.

Depth to groundwater was estimated based on the median sub-catchment elevation and estimated groundwater table depth. The depth of the groundwater table was estimated in GIS by sampling the river channel elevation from the DEM, and assuming the depth to groundwater table for each sub-catchment was equal to half the elevation range from the minimum to 80th percentile elevation of sampled points. The sub-catchment depth to

groundwater was then calculated as the median sub-catchment elevation minus the depth of the groundwater table.

Table D-6. Calculated Statistics for the Kaituna

SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID1	31.1	521.9	6.3	136.2
SCID2	12.6	497.3	9.9	103.1
SCID3	15.1	423.3	9.7	121.6
SCID5	22.5	421.8	7.7	107.9
SCID6	20.9	308.4	11.8	67.4
SCID7	10.8	306.2	10.2	86.7
SCID8	26.1	356.1	6.5	81.7
SCID9	13.3	245.0	12.1	53.8
SCID10	9.4	161.6	16.4	44.9
SCID11	11.4	238.4	9.3	90.9
SCID12	12.6	118.7	10.3	59.9
SCID13	16.6	350.0	7.7	117.5
SCID14	10.8	290.2	9.9	90.2
SCID15	4.6	314.0	10.0	114.0
SCID16	9.0	275.1	12.6	75.1
SCID17	7.2	255.7	13.5	55.7
SCID18	15.4	194.6	15.3	36.0
SCID19	7.9	114.6	14.1	29.8
SCID20	3.8	151.9	13.6	54.9
SCID21	2.2	76.1	12.9	26.1
SCID22	10.0	66.5	11.4	19.2
SCID23	10.0	29.2	1.9	17.7
SCID24	4.2	28.5	0.6	18.5
SCID25	4.9	20.0	0.5	12.2
SCID26	3.2	18.0	0.3	8.0
SCID27	6.2	210.8	8.0	112.9
SCID28	6.1	132.6	5.3	73.6
SCID29	3.7	93.4	10.2	43.8
SCID30	14.1	58.2	5.8	31.7
SCID31	2.9	24.7	1.3	14.6
SCID32	16.8	399.8	8.9	110.0
SCID33	21.4	415.4	10.3	115.8
SCID34	17.7	349.3	10.4	135.5

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SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID35	8.4	248.9	12.1	106.5
SCID36	5.6	128.9	12.4	62.3
SCID37	3.7	36.9	5.1	20.6
SCID38	8.8	92.4	4.6	51.0
SCID39	1.9	10.9	0.3	0.9
SCID40	11.6	270.0	12.5	127.0
SCID41	12.8	53.5	4.5	24.5
SCID42	22.8	300.5	15.3	117.4
SCID43	25.0	182.2	13.5	96.3
SCID44	3.5	27.9	3.1	7.2
SCID45	2.9	6.8	0.2	6.0
SCID46	6.2	141.2	16.1	99.2
SCID47	5.0	20.5	1.2	7.2
SCID48	6.0	119.4	14.4	98.8
SCID49	1.3	39.3	5.1	29.3
SCID50	5.5	14.7	1.8	6.0
SCID51	3.8	4.3	0.1	6.0
SCID52	14.4	11.7	1.3	8.7
SCID53	4.0	10.0	0.2	2.7
SCID54	4.6	2.2	0.2	2.2
SCID55	11.6	8.2	0.2	2.6
SCID56	9.0	9.5	0.4	6.2
SCID57	3.4	2.4	0.3	1.4
SCID58	12.4	23.2	1.1	16.2
SCID59	2.2	28.2	5.7	26.9
SCID60	10.0	26.9	1.2	16.9
SCID61	2.3	41.3	9.7	40.8
SCID62	10.7	269.0	11.5	69.0
SCID63	15.5	168.8	14.7	59.0
SCID64	10.2	70.2	8.7	21.5
SCID65	9.9	278.8	10.0	87.3
SCID66	7.7	170.2	13.9	71.3
SCID67	3.0	94.2	10.3	33.2
SCID68	4.3	258.6	9.3	73.0
SCID69	9.7	175.0	11.8	78.1
SCID70	8.5	283.0	9.9	83.0

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SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID71	7.3	176.3	12.7	72.1
SCID72	6.8	77.3	7.6	28.3
SCID73	7.0	28.2	2.0	16.5
SCID74	7.4	59.5	6.6	23.1
SCID75	7.5	25.2	2.2	15.0
SCID76	5.3	121.6	5.8	59.8
SCID77	7.4	42.6	3.6	24.7
SCID78	2.2	11.0	0.4	1.0
SCID79	5.4	252.4	9.9	59.0
SCID80	7.1	167.5	12.9	70.6
SCID81	19.5	65.5	7.8	32.6
SCID82	1.4	12.6	0.3	2.6
SCID83	10.9	8.2	0.4	0.9
SCID84	9.6	62.3	2.7	36.6
SCID85	3.1	8.7	0.3	2.4
SCID86	19.8	286.9	11.9	87.3
SCID87	11.9	162.9	13.2	56.1
SCID88	5.8	227.0	6.9	58.6
SCID89	8.7	244.8	6.0	66.9
SCID90	7.7	143.0	11.0	55.5
SCID91	8.2	238.9	6.6	67.8
SCID92	8.8	241.1	8.5	78.8
SCID93	9.2	142.6	8.7	65.0
SCID94	5.4	136.2	7.6	69.2
SCID95	5.3	110.3	7.0	58.6
SCID96	10.2	63.8	12.9	24.5
SCID97	9.7	80.7	5.7	47.4
SCID98	10.2	23.3	2.5	15.9
SCID99	2.2	25.4	1.3	15.4
SCID100	18.7	9.6	0.8	7.7
SCID101	4.8	35.9	3.0	28.7
SCID102	7.9	38.3	6.1	32.5
SCID103	2.6	15.7	2.6	14.8
SCID104	6.9	251.6	13.2	86.5
SCID105	10.0	128.9	16.3	54.5
SCID106	3.4	152.3	12.6	88.8

SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID107	24.8	285.2	14.3	85.7
SCID108	9.1	132.1	15.4	52.3
SCID109	12.3	354.0	11.6	78.3
SCID110	12.8	184.4	15.5	54.9
SCID111	8.7	101.0	12.8	43.7
SCID112	9.4	77.3	11.5	40.1
SCID113	5.8	66.5	8.7	53.4
SCID114	20.4	49.3	8.3	40.6
SCID115	15.0	93.5	13.2	71.3
SCID116	3.9	62.6	7.9	58.7
SCID117	10.9	252.3	15.1	65.9
SCID118	19.4	96.0	13.9	43.9
SCID119	25.6	50.3	7.6	42.7
SCID120	10.0	2.5	0.3	2.5

Table D-7. Calculated Statistics for the Rangitāiki WMA

SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID1	101.5	766.7	5.4	75.0
SCID2	56.8	737.4	2.4	35.9
SCID3	18.6	732.0	1.4	31.7
SCID4	55.0	679.5	1.4	53.4
SCID5	77.0	743.7	3.1	41.6
SCID6	43.7	694.7	1.6	62.9
SCID7	77.1	708.0	2.1	71.0
SCID8	24.4	630.8	1.2	35.0
SCID9	48.0	649.1	1.5	43.2
SCID10	13.0	615.7	2.2	29.0
SCID11	55.7	676.9	1.7	51.8
SCID12	82.3	582.2	2.3	50.4
SCID13	62.7	511.8	2.9	37.8
SCID14	29.4	655.4	2.0	34.0
SCID15	29.1	620.7	2.6	35.3
SCID16	20.6	921.1	27.7	179.2

SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID17	60.8	752.0	19.9	140.5
SCID18	20.4	711.2	20.2	119.2
SCID19	67.0	767.9	6.6	109.8
SCID20	21.9	693.1	9.8	81.7
SCID21	33.3	535.1	8.0	73.1
SCID22	24.7	500.3	8.4	73.0
SCID23	9.6	514.8	18.0	96.7
SCID24	39.3	402.1	4.4	40.5
SCID25	21.6	401.3	9.7	75.7
SCID26	18.4	303.4	13.0	84.0
SCID27	17.1	210.8	2.9	35.3
SCID28	25.9	176.3	1.1	22.7
SCID29	10.9	181.1	3.5	25.5
SCID30	6.3	154.1	4.0	17.8
SCID31	21.5	222.8	13.7	82.0
SCID32	19.8	125.8	5.4	26.9
SCID33	5.7	195.7	14.8	60.2
SCID34	13.2	175.0	15.0	68.4
SCID35	9.3	107.0	12.2	64.3
SCID36	3.1	71.9	12.8	31.2
SCID37	5.6	16.3	0.9	12.0
SCID38	17.3	8.2	0.2	6.2
SCID39	16.9	675.1	26.8	178.8
SCID40	9.7	559.7	18.8	91.8
SCID41	39.6	574.6	17.5	107.4
SCID42	40.5	607.0	19.7	126.7
SCID43	29.2	440.7	9.7	69.3
SCID44	21.4	375.6	10.3	55.2
SCID45	11.3	479.8	22.4	104.0
SCID46	55.8	417.1	14.8	105.0
SCID47	52.8	543.4	26.9	191.0
SCID48	20.2	647.8	25.1	148.8
SCID49	17.2	591.9	24.8	139.0
SCID50	61.9	639.3	26.2	194.3
SCID51	97.9	612.4	30.2	225.7
SCID52	16.9	217.5	3.5	29.8

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SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID53	16.8	567.4	10.7	67.8
SCID54	13.8	463.3	18.0	83.6
SCID55	26.2	501.9	3.7	40.2
SCID56	39.9	499.2	2.0	36.3
SCID57	16.8	396.3	4.2	82.6
SCID58	27.1	477.7	2.4	37.7
SCID59	32.3	333.8	6.4	64.7
SCID60	18.3	528.9	2.0	34.7
SCID61	22.5	364.4	4.7	72.7
SCID62	13.6	527.1	3.0	53.9
SCID63	29.4	329.1	7.9	56.2
SCID64	10.6	517.7	4.1	40.2
SCID65	21.7	347.3	9.2	68.3
SCID66	24.2	518.5	5.3	43.6
SCID67	31.4	368.9	9.7	82.3
SCID68	54.7	406.3	8.2	100.9
SCID69	26.7	465.4	7.5	79.4
SCID70	19.0	321.8	12.1	67.5
SCID71	23.5	532.3	4.1	15.8
SCID72	18.8	466.8	5.5	57.7
SCID73	76.3	388.8	11.4	88.9
SCID74	12.8	693.4	31.2	241.2
SCID75	13.1	210.6	1.4	40.0
SCID76	21.4	215.6	3.5	40.3
SCID77	9.9	678.1	31.7	172.4
SCID78	13.0	200.3	1.8	35.0
SCID79	16.0	599.4	29.1	202.6
SCID80	4.2	564.2	29.1	158.7
SCID81	11.4	189.2	1.5	40.3
SCID82	7.5	576.1	27.0	140.2
SCID83	7.3	200.5	2.3	25.0
SCID84	6.2	230.5	7.9	42.1
SCID85	10.3	511.1	29.4	183.2
SCID86	6.1	216.6	9.5	36.9
SCID87	39.4	557.3	28.8	190.1
SCID88	6.6	281.5	16.1	76.5

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SC ID	Area (km2)	Weighted Average		
		Elevation (m aMSL)	Slope (Degrees)	Depth to Groundwater (m)
SCID89	43.5	481.6	29.6	209.1
SCID90	2.2	225.2	15.5	96.3
SCID91	5.8	390.1	27.8	132.0
SCID92	15.4	242.5	6.6	34.2
SCID93	26.4	314.9	9.8	72.5
SCID94	9.2	222.7	12.1	62.9
SCID95	49.0	327.6	10.9	100.0
SCID96	15.6	292.4	12.1	77.1
SCID97	33.7	307.3	12.1	89.7
SCID98	24.4	303.0	10.0	111.2
SCID99	23.2	427.8	30.4	190.9
SCID100	4.0	351.6	23.3	111.3
SCID101	4.7	337.5	17.6	112.5
SCID102	3.2	329.0	15.6	119.3
SCID103	2.3	295.9	15.4	108.3
SCID104	8.6	307.4	13.4	116.1
SCID105	8.1	294.5	11.5	104.0
SCID106	10.3	212.0	10.1	101.7
SCID107	15.9	132.8	18.0	66.4
SCID108	12.1	15.4	0.8	3.9
SCID109	27.7	7.0	0.2	4.8
SCID110	4.6	8.2	0.4	4.6
SCID111	4.2	237.5	12.5	64.5
SCID112	21.0	233.5	10.8	57.5
SCID113	7.5	169.9	10.5	82.8
SCID114	6.5	118.7	9.0	54.2
SCID115	18.5	101.1	11.6	59.6
SCID117	5.6	16.5	0.4	3.4
SCID118	13.6	242.9	6.6	31.4

D.7 Soil Classes

The weighted average soil properties of each sub-catchment were calculated from S-map data. Classes were assigned for drainage, potential rooting depth and plant available water which are described in **Section D.1**, **Section D.2** and **Section D.4**. A summary of the sub-catchment averaged values for the Kaituna and Rangitāiki WMAs are presented in **Table D-8** and **Table D-9** respectively.

Table D-8. Weighted average soil classes for Kaituna

SC ID	Weighted Average				
	Drainage Class	Potential Rooting Depth Class	Plant Available Water	Soil Permeability (mm/d)	Soil Depth (mm)
SCID1	5.0	2.1	2.5	4.4	1011.3
SCID2	5.0	2.4	2.9	5.3	934.9
SCID3	5.0	1.5	2.4	4.6	1185.0
SCID5	5.0	1.6	2.4	4.5	1165.4
SCID6	5.0	1.8	2.4	4.6	1107.2
SCID7	5.0	1.9	2.6	5.0	1089.9
SCID8	5.0	1.6	2.1	4.1	1159.8
SCID9	5.0	2.4	2.8	5.2	928.1
SCID10	5.0	2.3	2.6	5.0	955.7
SCID11	5.0	1.6	2.4	4.6	1153.1
SCID12	4.9	1.8	2.6	4.7	1109.7
SCID13	5.0	2.0	2.5	4.4	1050.3
SCID14	5.0	2.2	2.3	4.5	999.4
SCID15	5.0	2.1	2.6	4.9	1016.8
SCID16	5.0	1.6	3.1	4.7	1155.4
SCID17	5.0	2.6	3.6	6.2	864.1
SCID18	5.0	2.1	2.8	4.9	1011.8
SCID19	5.0	2.2	2.5	4.8	996.2
SCID20	5.0	2.1	2.4	4.7	1002.5
SCID21	5.0	2.0	2.6	6.0	1055.6
SCID22	4.8	2.3	2.5	4.7	986.8
SCID23	4.1	2.3	2.3	4.5	1021.5
SCID24	4.3	1.9	2.7	5.7	1128.3
SCID25	4.7	1.4	2.3	6.6	1242.8
SCID26	3.0	3.6	4.0	6.0	692.9
SCID27	5.0	1.6	2.5	4.7	1178.3
SCID28	5.0	1.2	2.0	4.0	1290.3
SCID29	5.0	2.0	2.9	5.4	1037.3
SCID30	4.4	2.0	2.4	4.9	1088.8
SCID31	3.0	3.6	3.6	4.0	718.7

SC ID	Weighted Average				
	Drainage Class	Potential Rooting Depth Class	Plant Available Water	Soil Permeability (mm/d)	Soil Depth (mm)
SCID32	5.0	1.9	2.4	4.6	1068.7
SCID33	5.0	1.9	2.5	4.7	1072.3
SCID34	5.0	1.6	2.4	4.6	1164.5
SCID35	5.0	1.7	2.6	4.9	1132.7
SCID36	5.0	1.7	2.6	4.9	1150.4
SCID37	3.6	3.1	3.5	4.0	828.7
SCID38	4.9	1.3	2.0	4.5	1258.5
SCID39	2.0	5.0	4.8	Not Defined by Smap	345.0
SCID40	5.0	1.8	2.5	4.8	1110.2
SCID41	4.2	2.3	2.5	5.6	1023.8
SCID42	5.0	2.2	2.6	4.9	997.9
SCID43	5.0	2.0	2.7	5.2	1036.0
SCID44	3.5	3.0	2.6	7.0	866.2
SCID45	1.9	5.0	4.0	7.0	381.8
SCID46	4.5	3.1	3.5	6.0	739.3
SCID47	3.1	3.5	2.6	4.0	725.2
SCID48	4.8	2.4	2.5	4.8	926.9
SCID49	2.9	3.9	3.1	5.8	554.2
SCID50	2.5	4.5	4.6	6.1	448.0
SCID51	2.0	4.9	4.8	Not Defined by Smap	359.6
SCID52	3.0	3.8	4.5	6.3	638.4
SCID53	2.1	4.9	4.9	4.0	375.0
SCID54	3.9	2.5	4.4	7.0	969.7
SCID55	2.3	4.6	4.7	7.0	455.5
SCID56	2.5	4.2	4.5	4.5	540.7
SCID57	2.5	4.3	4.9	4.4	543.3
SCID58	4.0	2.4	3.0	5.1	1017.9
SCID59	4.5	1.6	2.4	6.2	1201.0
SCID60	3.7	2.8	3.3	4.4	909.3
SCID61	5.0	1.3	2.1	7.0	1255.5
SCID62	5.0	1.2	3.0	4.2	1300.6
SCID63	5.0	1.7	2.6	5.3	1152.1
SCID64	4.9	1.2	2.0	7.0	1314.8
SCID65	5.0	1.3	3.0	4.8	1263.6
SCID66	5.0	1.0	2.1	6.8	1350.0
SCID67	4.0	2.3	2.3	7.0	1055.1

SC ID	Weighted Average				
	Drainage Class	Potential Rooting Depth Class	Plant Available Water	Soil Permeability (mm/d)	Soil Depth (mm)
SCID68	5.0	1.0	2.8	4.6	1341.1
SCID69	4.7	1.3	2.1	6.9	1276.0
SCID70	5.0	1.6	3.3	4.8	1168.0
SCID71	4.6	1.6	2.5	5.8	1201.0
SCID72	4.5	1.6	2.1	7.0	1204.3
SCID73	3.7	2.6	2.3	7.0	986.4
SCID74	4.3	1.8	2.2	7.0	1154.2
SCID75	4.0	2.3	2.3	7.0	1054.1
SCID76	5.0	1.0	2.0	6.3	1350.0
SCID77	4.7	1.3	2.1	7.0	1271.0
SCID78	1.3	5.7	3.6	Not Defined by Smap	240.8
SCID79	5.0	1.0	3.0	4.0	1350.0
SCID80	5.0	1.0	2.1	6.8	1350.0
SCID81	4.8	1.2	2.1	6.7	1295.4
SCID82	2.2	4.6	3.0	5.8	502.2
SCID83	1.3	5.1	3.3	1.6	336.7
SCID84	4.9	1.1	2.0	6.8	1335.1
SCID85	1.6	5.0	4.0	Not Defined by Smap	339.0
SCID86	5.0	1.0	3.0	4.8	1350.0
SCID87	5.0	1.0	2.7	5.7	1350.0
SCID88	5.0	1.0	3.0	4.1	1350.0
SCID89	5.0	1.0	3.0	4.0	1350.0
SCID90	5.0	1.0	2.4	5.8	1350.0
SCID91	5.0	1.0	3.0	4.0	1350.0
SCID92	5.0	1.0	3.0	4.0	1350.0
SCID93	4.9	1.2	2.4	4.5	1308.7
SCID94	5.0	1.1	2.1	4.1	1327.6
SCID95	5.0	1.0	2.1	7.0	1350.0
SCID96	4.3	2.1	3.2	6.8	1053.8
SCID97	4.9	1.1	2.1	4.1	1321.3
SCID98	3.0	3.5	3.4	5.3	729.6
SCID99	4.4	1.8	2.6	4.9	1143.1
SCID100	3.1	3.3	3.5	6.2	762.6
SCID101	4.7	1.4	2.3	4.7	1258.3
SCID102	4.9	1.2	2.2	4.1	1302.5
SCID103	4.8	1.2	2.2	4.1	1289.1

SC ID	Weighted Average				
	Drainage Class	Potential Rooting Depth Class	Plant Available Water	Soil Permeability (mm/d)	Soil Depth (mm)
SCID104	5.0	1.0	3.0	5.4	1350.0
SCID105	5.0	1.0	2.6	5.4	1350.0
SCID106	5.0	1.0	2.0	4.0	1350.0
SCID107	5.0	1.0	3.0	5.1	1350.0
SCID108	4.6	1.5	2.7	4.3	1225.1
SCID109	5.0	1.0	3.6	6.6	1350.0
SCID110	5.0	1.0	3.1	5.2	1350.0
SCID111	5.0	1.0	2.0	4.0	1350.0
SCID112	4.5	1.6	2.1	4.0	1220.0
SCID113	4.5	1.9	2.4	4.4	1128.8
SCID114	4.3	2.1	2.6	4.4	1072.3
SCID115	4.7	1.4	2.3	4.4	1247.9
SCID116	5.0	1.0	2.2	4.1	1344.8
SCID117	5.0	1.0	3.8	6.9	1350.0
SCID118	5.0	1.0	2.6	5.1	1348.0
SCID119	4.6	2.0	2.9	5.8	1054.9
SCID120	5.0	1.0	4.1	7.0	1344.7

Table D-9. Weighted average soil classes for Rangitāiki.

SC ID	Weighted Average				
	Drainage Class	Potential Rooting Depth Class	Plant Available Water	Soil Permeability (mm/d)	Soil Depth (mm)
SCID1	4.9	1.6	2.3	6.4	1195.3
SCID2	5.0	4.1	3.6	6.8	561.5
SCID3	5.0	4.9	4.0	7.0	362.0
SCID4	5.0	4.7	3.8	6.9	421.3
SCID5	4.9	3.7	3.4	6.5	662.3
SCID6	5.0	4.5	3.7	6.9	480.2
SCID7	5.0	3.9	3.5	6.5	620.9
SCID8	5.0	3.6	3.3	6.9	700.0
SCID9	5.0	4.0	3.5	6.8	587.7
SCID10	5.0	1.8	2.4	6.7	1145.1
SCID11	5.0	3.4	3.2	6.5	739.8
SCID12	5.0	3.8	3.4	6.8	658.2

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SCID13	5.0	3.7	3.4	6.7	662.0
SCID14	5.0	3.5	3.2	6.3	732.9
SCID15	5.0	4.0	3.5	6.7	600.1
SCID16	5.0	4.9	3.0	6.8	375.6
SCID17	5.0	2.0	2.3	5.2	1091.7
SCID18	5.0	1.6	2.3	4.3	1193.3
SCID19	5.0	1.2	2.1	5.7	1302.7
SCID20	5.0	1.1	2.3	6.2	1336.2
SCID21	5.0	3.1	3.1	6.2	814.9
SCID22	5.0	2.8	2.9	6.3	886.9
SCID23	5.0	2.4	2.9	5.1	999.6
SCID24	4.8	3.5	3.2	5.9	712.2
SCID25	4.9	2.4	2.9	5.2	989.9
SCID26	5.0	2.3	3.0	6.6	1006.5
SCID27	5.0	2.3	3.2	7.0	1001.3
SCID28	5.0	2.0	3.0	7.0	1081.4
SCID29	5.0	1.6	2.6	7.0	1170.8
SCID30	5.0	2.1	3.1	7.0	1047.4
SCID31	5.0	1.1	3.9	6.9	1319.5
SCID32	4.8	1.6	4.0	6.0	1171.9
SCID33	5.0	1.1	4.0	6.9	1322.5
SCID34	5.0	1.0	3.7	7.0	1350.0
SCID35	5.0	1.4	4.0	6.1	1234.6
SCID36	5.0	1.0	3.9	6.9	1337.4
SCID37	5.0	1.9	4.5	4.1	1067.7
SCID38	3.8	2.2	3.5	4.2	897.8
SCID39	5.0	3.9	2.8	6.3	614.0
SCID40	5.0	1.0	2.1	4.4	1350.0
SCID41	5.0	1.6	2.4	4.9	1194.4
SCID42	4.8	3.2	2.9	6.3	798.1
SCID43	4.6	1.5	2.2	4.6	1233.0
SCID44	4.9	2.2	2.6	4.9	1030.9
SCID45	5.0	4.6	2.9	6.8	442.3
SCID46	4.9	2.1	2.6	5.9	1067.2
SCID47	5.0	4.3	3.0	6.9	505.7
SCID48	5.0	4.5	2.9	6.6	477.2
SCID49	5.0	3.9	2.7	6.6	627.4
SCID50	5.0	4.8	3.0	6.9	387.7
SCID51	5.0	5.0	3.0	7.0	350.9

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SCID52	5.0	2.5	3.9	6.8	944.5
SCID53	5.0	1.8	2.5	5.4	1147.5
SCID54	4.7	3.2	2.6	5.8	790.1
SCID55	5.0	3.7	3.4	6.7	667.1
SCID56	5.0	4.0	3.5	6.6	586.3
SCID57	5.0	2.3	2.6	5.4	1020.8
SCID58	5.0	3.2	3.3	5.7	795.5
SCID59	5.0	1.4	2.8	5.9	1242.6
SCID60	5.0	3.3	3.3	6.4	780.7
SCID61	5.0	1.2	3.2	6.8	1283.1
SCID62	5.0	2.1	4.9	6.0	1073.9
SCID63	5.0	1.4	3.1	7.0	1228.7
SCID64	5.0	1.2	4.7	6.9	1287.3
SCID65	5.0	1.6	3.1	7.0	1173.5
SCID66	5.0	1.5	4.7	6.9	1209.5
SCID67	5.0	1.6	3.0	7.0	1179.3
SCID68	5.0	1.6	2.9	7.0	1179.6
SCID69	5.0	1.3	3.1	7.0	1263.0
SCID70	5.0	1.0	2.3	7.0	1350.0
SCID71	5.0	1.0	3.4	7.0	1346.4
SCID72	5.0	1.5	3.1	7.0	1222.7
SCID73	5.0	1.0	4.0	7.0	1348.5
SCID74	5.0	4.9	3.0	7.0	369.3
SCID75	5.0	1.2	2.2	6.9	1303.3
SCID76	4.9	1.8	2.5	6.9	1150.2
SCID77	5.0	4.9	3.0	7.0	370.4
SCID78	4.1	3.3	3.8	6.6	756.0
SCID79	5.0	5.0	3.0	7.0	349.0
SCID80	5.0	5.0	3.0	7.0	345.0
SCID81	5.0	1.2	2.9	6.7	1307.7
SCID82	5.0	5.0	3.0	7.0	353.7
SCID83	5.0	1.0	2.4	6.9	1350.0
SCID84	5.0	1.6	2.6	7.0	1209.3
SCID85	5.0	4.2	3.2	7.0	534.2
SCID86	5.0	1.2	3.7	7.0	1307.2
SCID87	5.0	4.9	3.0	7.0	380.1
SCID88	5.0	1.2	3.4	6.9	1292.5
SCID89	5.0	4.7	2.9	7.0	408.1
SCID90	5.0	1.1	3.2	7.0	1319.5

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SCID91	5.0	3.9	3.0	7.0	629.0
SCID92	5.0	1.3	3.5	6.6	1269.7
SCID93	5.0	1.1	3.6	6.8	1326.8
SCID94	5.0	1.0	4.0	7.0	1350.0
SCID95	5.0	1.0	4.0	7.0	1350.0
SCID96	5.0	1.0	3.8	7.0	1350.0
SCID97	5.0	1.0	3.9	6.9	1338.8
SCID98	5.0	1.0	3.6	7.0	1350.0
SCID99	5.0	4.6	3.0	7.0	450.6
SCID100	5.0	2.7	3.0	7.0	918.8
SCID101	5.0	1.0	3.5	7.0	1341.7
SCID102	5.0	1.0	3.3	7.0	1350.0
SCID103	5.0	1.0	4.0	7.0	1350.0
SCID104	5.0	1.6	3.3	6.8	1205.3
SCID105	5.0	1.2	3.3	6.5	1295.6
SCID106	5.0	1.1	3.7	6.8	1329.3
SCID107	5.0	1.3	3.4	6.2	1266.9
SCID108	3.8	2.6	3.5	4.3	921.2
SCID109	2.6	4.3	2.6	3.2	513.6
SCID110	3.6	3.5	3.5	4.3	728.5
SCID111	5.0	1.0	3.8	7.0	1350.0
SCID112	5.0	1.0	3.9	7.0	1350.0
SCID113	5.0	1.0	3.8	7.0	1350.0
SCID114	5.0	1.0	3.8	7.0	1350.0
SCID115	5.0	1.0	3.7	6.9	1350.0
SCID117	5.0	1.0	2.8	4.6	1343.0
SCID118	5.0	1.0	2.2	7.0	1350.0

D.8 Geological Classes

The weighted average vertical hydraulic conductivity and geological permeability for each sub catchment is outlined in the tables below, with the main rock type from the geological map and the percentage occurrence within each catchment.

Table D-10. Rock hydraulic conductivity lookup table for Kaituna

Rock Hydraulic Conductivity Lookup Table												
	MUDSTONE	TEPHRA	ANDESITE	IGNIMBRITE	PEAT	BRECCIA	SANDSTONE	SAND	PUMICE	RHYOLITE	BROKEN FORMATION	GRAVEL
Kh (m/s)	1.00E-07	1.00E-07	1.00E-06	9.00E-06	5.00E-06	1.00E-06	2.00E-06	5.00E-05	4.00E-05	5.00E-06	5.00E-05	2.00E-04
Kv (m/s)	1.00E-08	1.00E-08	1.00E-07	9.00E-07	5.00E-07	1.00E-07	2.00E-07	5.00E-06	4.00E-06	5.00E-07	5.00E-06	2.00E-05

Table D-11. Rock hydraulic conductivity lookup table for Rangitaiki

Rock Hydraulic Conductivity Lookup Table												
	MUDSTONE	TEPHRA	ANDESITE	IGNIMBRITE	PEAT	BRECCIA	SANDSTONE	SAND	PUMICE	RHYOLITE	BROKEN FORMATION	GRAVEL
Kh (m/s)	1.00E-07	1.00E-07	1.00E-06	9.00E-06	5.00E-06	1.00E-06	2.00E-06	5.00E-05	4.00E-05	5.00E-06	5.00E-05	7.50E-05
Kv (m/s)	1.00E-08	1.00E-08	1.00E-07	9.00E-07	5.00E-07	1.00E-07	2.00E-07	5.00E-06	4.00E-06	5.00E-07	5.00E-06	7.50E-06

Table D-12. Qmap Geological classes for the Kaituna

SC ID	Weighted Average		Main Rock Type Percentage Breakdown						
	Vertical Hydraulic Conductivity (m/s)	Geology Permeability (mm/d)	Mudstone	Andesite	Peat	Ignimbrite	Sandstone	Rhyolite	Gravel
SCID1	9.00E-07	2.9	0	0	0	100	0	0	0
SCID2	9.00E-07	2.9	0	0	0	100	0	0	0
SCID3	9.00E-07	2.9	0	0	0	100	0	0	0
SCID5	1.08E-06	2.9	0	0	0	99	0	0	1
SCID6	3.28E-06	3.6	0	0	0	88	0	0	12
SCID7	9.41E-07	2.9	0	0	0	100	0	0	0
SCID8	2.93E-06	3.5	0	0	0	89	0	0	11
SCID9	9.00E-07	2.9	0	0	0	100	0	0	0
SCID10	6.81E-06	4.7	0	0	0	69	0	0	31
SCID11	1.04E-06	2.9	0	0	0	99	0	0	1
SCID12	7.30E-06	4.8	0	0	0	66	0	0	34
SCID13	9.03E-07	2.9	0	0	0	100	0	0	0
SCID14	9.00E-07	2.9	0	0	0	100	0	0	0
SCID15	1.65E-06	3.1	0	0	0	96	0	0	4
SCID16	2.28E-06	3.3	0	0	0	93	0	0	7
SCID17	1.56E-06	3.1	0	0	0	97	0	0	3
SCID18	9.00E-07	2.9	0	0	0	100	0	0	0
SCID19	4.55E-06	4.0	0	0	0	81	0	0	19
SCID20	3.62E-06	3.7	0	0	0	86	0	0	14
SCID21	2.27E-06	3.3	0	0	0	93	0	0	7

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SCID22	7.81E-06	5.0	0	0	0	64	0	0	36
SCID23	2.00E-05	8.6	0	0	0	0	0	0	100
SCID24	1.91E-05	8.3	0	0	5	0	0	0	95
SCID25	1.98E-05	8.6	0	0	1	0	0	0	99
SCID26	2.00E-05	8.6	0	0	0	0	0	0	100
SCID27	9.00E-07	2.9	0	0	0	100	0	0	0
SCID28	1.51E-06	3.1	0	0	0	97	0	0	3
SCID29	6.72E-06	4.6	0	0	0	70	0	0	30
SCID30	1.40E-05	6.8	0	0	0	32	0	0	68
SCID31	2.00E-05	8.6	0	0	0	0	0	0	100
SCID32	9.00E-07	2.9	0	0	0	100	0	0	0
SCID33	8.82E-07	2.9	0	0	0	95	0	5	0
SCID34	8.40E-07	3.1	0	0	0	85	0	15	0
SCID35	9.00E-07	2.9	0	0	0	100	0	0	0
SCID36	9.04E-07	2.9	0	0	0	100	0	0	0
SCID37	1.50E-05	7.1	0	0	0	26	0	0	74
SCID38	5.32E-06	4.2	0	0	0	77	0	0	23
SCID39	2.00E-05	8.6	0	0	0	0	0	0	100
SCID40	8.10E-07	3.2	0	0	0	78	0	22	0
SCID41	1.06E-05	5.8	0	0	0	49	0	0	51
SCID42	5.79E-07	2.7	0	25	0	45	0	31	0
SCID43	9.17E-07	1.8	0	48	0	48	0	2	2
SCID44	1.38E-05	6.8	0	0	0	33	0	0	67
SCID45	2.00E-05	8.6	0	0	0	0	0	0	100

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SCID46	1.55E-06	1.0	0	88	0	5	0	0	7
SCID47	1.60E-05	7.4	0	1	0	20	0	0	79
SCID48	1.85E-06	1.9	0	55	0	38	0	0	7
SCID49	1.38E-05	6.5	0	10	0	22	0	0	68
SCID50	1.79E-05	8.0	0	0	0	11	0	0	89
SCID51	2.00E-05	8.6	0	0	0	0	0	0	100
SCID52	1.91E-05	8.4	0	0	0	5	0	0	95
SCID53	1.99E-05	8.6	0	0	1	0	0	0	99
SCID54	1.35E-05	6.0	0	0	33	0	0	0	67
SCID55	1.65E-05	7.2	0	0	18	0	0	0	82
SCID56	7.95E-06	3.8	0	0	62	0	0	0	38
SCID57	7.88E-06	3.8	0	0	62	0	0	0	38
SCID58	1.48E-05	6.6	0	0	27	0	0	0	73
SCID59	1.83E-05	8.0	0	0	9	0	0	0	91
SCID60	1.24E-05	5.8	0	0	28	11	0	0	61
SCID61	2.00E-05	8.6	0	0	0	0	0	0	100
SCID62	9.00E-07	2.9	0	0	0	100	0	0	0
SCID63	1.95E-06	3.2	0	0	0	94	0	0	6
SCID64	8.14E-06	5.1	0	0	0	62	0	0	38
SCID65	4.02E-06	3.8	0	0	0	84	0	0	16
SCID66	4.69E-06	4.0	0	0	0	80	0	0	20
SCID67	7.23E-06	4.8	0	0	0	67	0	0	33
SCID68	9.00E-07	2.9	0	0	0	100	0	0	0
SCID69	3.54E-06	3.7	0	0	0	86	0	0	14

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SCID70	3.18E-06	3.6	0	0	0	88	0	0	12
SCID71	6.11E-06	4.5	0	0	0	73	0	0	27
SCID72	5.76E-06	4.3	0	0	0	75	0	0	25
SCID73	1.18E-05	6.2	0	0	0	43	0	0	57
SCID74	5.21E-06	4.2	0	0	0	77	0	0	23
SCID75	1.24E-05	6.2	0	0	9	31	0	0	60
SCID76	1.10E-06	2.9	0	0	0	99	0	0	1
SCID77	6.78E-06	4.6	0	0	2	68	0	0	31
SCID78	3.35E-06	2.0	0	0	85	0	0	0	15
SCID79	3.83E-06	3.8	0	0	0	85	0	0	15
SCID80	5.15E-06	4.2	0	0	0	78	0	0	22
SCID81	7.30E-06	4.8	0	0	0	67	0	0	33
SCID82	5.24E-06	2.8	0	0	76	0	0	0	24
SCID83	1.59E-06	1.3	0	0	94	0	0	0	6
SCID84	8.16E-06	5.0	0	0	2	60	0	0	38
SCID85	5.69E-07	0.9	0	0	100	0	0	0	0
SCID86	5.04E-06	4.1	0	0	0	78	0	0	22
SCID87	3.59E-06	3.7	0	0	0	86	0	0	14
SCID88	2.89E-06	3.5	0	0	0	90	0	0	10
SCID89	1.44E-06	3.0	0	0	0	97	0	0	3
SCID90	1.81E-06	3.2	0	0	0	95	0	0	5
SCID91	2.67E-06	3.4	0	0	0	91	0	0	9
SCID92	2.54E-06	3.4	0	0	0	91	0	0	9
SCID93	4.41E-06	3.9	0	0	0	82	0	0	18

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SCID94	4.18E-06	3.9	0	0	0	83	0	0	17
SCID95	9.37E-07	2.9	0	0	0	100	0	0	0
SCID96	5.84E-06	4.4	0	0	0	74	0	0	26
SCID97	3.21E-06	3.6	0	0	0	88	0	0	12
SCID98	7.68E-06	4.2	0	0	39	25	0	0	36
SCID99	1.66E-05	7.6	0	0	0	18	0	0	82
SCID100	1.03E-05	4.8	0	0	50	0	0	0	50
SCID101	1.41E-05	6.5	0	0	20	9	2	0	70
SCID102	1.34E-05	6.2	0	0	16	0	18	0	66
SCID103	1.69E-05	7.4	0	0	16	0	0	0	84
SCID104	1.86E-06	3.2	0	0	0	95	0	0	5
SCID105	9.13E-07	2.9	0	0	0	100	0	0	0
SCID106	9.07E-07	2.9	0	0	0	100	0	0	0
SCID107	1.99E-06	3.2	0	0	0	94	0	0	6
SCID108	5.28E-06	4.2	0	0	0	77	0	0	23
SCID109	2.80E-06	3.5	0	0	0	90	0	0	10
SCID110	2.30E-06	3.3	0	0	0	93	0	0	7
SCID111	3.83E-06	3.7	0	0	0	83	2	0	15
SCID112	6.68E-06	4.6	0	0	0	69	1	0	30
SCID113	3.77E-06	3.6	0	0	0	74	11	0	15
SCID114	1.01E-05	5.4	0	0	0	29	23	0	49
SCID115	3.14E-06	3.3	0	0	0	61	27	0	13
SCID116	2.47E-06	3.4	0	0	0	92	0	0	8
SCID117	1.26E-06	3.0	0	0	0	98	0	0	2

SCID118	3.20E-06	3.5	2	0	0	86	0	0	12
SCID119	1.01E-05	5.6	0	0	8	39	0	5	48
SCID120	2.00E-05	8.6	0	0	0	0	0	0	100

Table D-13. Q-Map Geological classes for the Rangitāiki

SC ID	Weighted Average		Main Rock Type Percentage Breakdown											
	Vertical Hydraulic Conductivity (m/s)	Geology Permeability (mm/d)	Andesite	Peat	Igimbrite	Sandstone	Rhyolite	Gravel	A__	Breccia	Broken Formation	Pumice	Sand	Tephra
SCID1	8.76E-06	3.7	0	3	68	12	0	17	0	0	0	0	0	0
SCID2	8.86E-07	2.9	0	0	98	2	0	0	0	0	0	0	0	0
SCID3	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID4	8.99E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID5	9.50E-07	2.9	0	1	96	2	0	1	0	0	0	0	0	0
SCID6	9.45E-07	2.9	0	0	99	0	0	0	0	0	0	1	0	0
SCID7	1.11E-06	3.0	0	0	95	1	0	3	0	0	0	2	0	0
SCID8	9.27E-07	2.9	0	0	99	0	0	0	0	0	0	1	0	0
SCID9	9.06E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID10	1.12E-06	2.9	0	0	93	0	0	0	0	0	0	7	0	0
SCID11	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID12	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID13	1.05E-06	2.9	0	0	95	0	0	0	0	0	0	5	0	0
SCID14	9.51E-07	2.9	0	0	98	0	0	0	0	0	0	2	0	0
SCID15	1.22E-06	2.9	0	0	89	0	0	0	0	0	0	10	0	0

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SCID16	2.34E-07	1.8	0	0	5	95	0	0	0	0	0	0	0	0
SCID17	4.77E-07	2.2	0	0	40	60	0	0	0	0	0	0	0	0
SCID18	3.20E-07	1.9	0	0	17	83	0	0	0	0	0	0	0	0
SCID19	8.64E-07	2.8	0	0	95	5	0	0	0	0	0	0	0	0
SCID20	8.95E-07	2.9	0	0	99	1	0	0	0	0	0	0	0	0
SCID21	9.33E-07	2.9	0	0	99	0	0	1	0	0	0	0	0	0
SCID22	1.08E-06	3.0	0	0	97	0	0	3	0	0	0	0	0	0
SCID23	7.91E-07	2.4	0	0	44	49	0	1	0	0	0	6	0	0
SCID24	1.79E-06	3.4	0	0	79	0	0	7	0	0	0	14	0	0
SCID25	1.05E-06	3.0	0	0	85	11	0	3	0	0	0	0	0	0
SCID26	2.96E-06	4.6	0	0	42	24	0	33	0	0	0	2	0	0
SCID27	5.88E-06	6.3	0	0	1	9	0	61	0	0	0	20	10	0
SCID28	5.99E-06	6.5	0	0	6	0	0	61	0	0	0	28	5	0
SCID29	3.69E-06	4.5	0	0	47	0	0	29	0	0	0	11	13	0
SCID30	3.45E-06	5.1	0	0	17	0	0	32	33	0	0	4	14	0
SCID31	1.29E-06	3.2	0	0	93	1	0	6	0	0	0	0	0	0
SCID32	6.27E-06	7.6	0	0	13	5	0	82	0	0	0	0	0	0
SCID33	1.14E-06	3.2	0	0	94	2	0	4	0	0	0	0	0	0
SCID34	7.57E-07	2.9	0	0	84	0	0	0	16	0	0	0	0	0
SCID35	2.20E-06	3.9	0	0	74	0	0	15	1	1	0	10	0	0
SCID36	1.15E-06	3.0	0	0	95	0	0	2	0	0	0	3	0	0
SCID37	5.88E-06	6.4	0	0	2	0	0	56	0	0	0	41	0	0
SCID38	3.72E-06	3.7	0	36	0	0	0	27	0	0	0	33	4	0
SCID39	2.34E-07	1.8	0	0	5	95	0	0	0	0	0	0	0	0

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SCID40	6.68E-07	2.5	0	0	67	33	0	0	0	0	0	0	0	0
SCID41	6.18E-07	2.3	0	0	45	54	0	1	0	0	0	0	0	0
SCID42	1.20E-06	2.7	0	0	33	54	0	8	0	0	0	5	0	0
SCID43	2.02E-06	3.8	0	0	67	14	0	18	0	0	0	0	0	0
SCID44	2.26E-06	3.7	0	0	45	27	0	20	0	0	0	9	0	0
SCID45	3.18E-07	1.9	0	0	17	83	0	0	0	0	0	0	0	0
SCID46	6.27E-07	2.4	0	0	60	40	0	0	0	0	0	0	0	0
SCID47	6.38E-07	2.1	0	0	8	85	0	4	0	0	0	2	0	0
SCID48	2.49E-07	1.8	0	0	7	93	0	0	0	0	0	0	0	0
SCID49	2.85E-07	1.8	0	0	0	99	0	1	0	0	0	0	0	0
SCID50	2.45E-07	1.8	0	0	6	94	0	0	0	0	0	0	0	0
SCID51	2.13E-07	1.7	0	0	0	100	0	0	0	0	0	0	0	0
SCID52	6.69E-06	7.7	0	0	0	6	0	84	0	0	0	10	0	0
SCID53	8.64E-07	2.8	0	0	95	5	0	0	0	0	0	0	0	0
SCID54	7.49E-07	2.3	0	0	31	64	0	4	0	0	0	0	0	0
SCID55	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID56	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID57	9.27E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID58	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID59	1.70E-06	3.5	0	0	85	2	0	12	0	0	0	2	0	0
SCID60	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID61	9.90E-07	2.9	0	0	97	0	0	0	0	0	0	3	0	0
SCID62	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID63	1.13E-06	2.9	0	0	93	0	0	0	0	0	0	7	0	0

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SCID64	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID65	1.09E-06	2.9	0	0	95	0	0	1	0	0	0	5	0	0
SCID66	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID67	1.10E-06	3.0	0	0	97	0	0	3	0	0	0	1	0	0
SCID68	1.10E-06	3.0	0	0	96	1	0	3	0	0	0	0	0	0
SCID69	1.32E-06	3.3	0	0	94	0	0	6	0	0	0	0	0	0
SCID70	9.55E-07	2.9	0	0	99	0	0	1	0	0	0	0	0	0
SCID71	2.82E-07	1.1	0	0	27	0	7	0	0	0	0	0	0	66
SCID72	1.48E-06	3.4	0	0	91	0	0	9	0	0	0	0	0	0
SCID73	1.19E-06	3.1	0	0	96	0	0	4	0	0	0	0	0	0
SCID74	4.34E-07	1.9	0	0	0	97	0	3	0	0	0	0	0	0
SCID75	7.49E-06	8.6	0	0	0	0	0	100	0	0	0	0	0	0
SCID76	6.78E-06	7.9	0	0	0	8	0	88	0	0	0	4	0	0
SCID77	4.29E-07	1.9	0	0	0	97	0	3	0	0	0	0	0	0
SCID78	7.49E-06	8.6	0	0	0	0	0	100	0	0	0	0	0	0
SCID79	2.65E-07	1.8	0	0	0	99	0	1	0	0	0	0	0	0
SCID80	2.80E-07	1.7	0	0	0	99	0	1	0	0	0	0	0	0
SCID81	7.45E-06	8.6	0	0	0	0	0	99	0	0	0	0	1	0
SCID82	3.55E-07	1.8	0	0	0	98	0	2	0	0	0	0	0	0
SCID83	7.46E-06	8.6	0	0	0	0	0	99	0	0	0	0	0	0
SCID84	4.20E-06	5.4	0	0	28	17	0	45	0	0	0	0	11	0
SCID85	5.06E-07	2.0	0	0	22	76	0	2	0	0	0	0	0	0
SCID86	3.31E-06	5.0	0	0	62	1	0	37	0	0	0	0	0	0
SCID87	2.24E-07	1.8	0	0	3	97	0	0	0	0	0	0	0	0

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SCID88	1.58E-06	3.4	0	0	68	20	0	12	0	0	0	0	0	0
SCID89	2.09E-07	1.7	0	0	1	99	0	0	0	0	0	0	0	0
SCID90	1.55E-06	3.4	0	0	70	19	0	12	0	0	0	0	0	0
SCID91	4.75E-07	2.2	0	0	30	69	0	1	0	0	0	0	0	0
SCID92	9.66E-07	2.9	0	0	99	0	0	1	0	0	0	0	0	0
SCID93	9.55E-07	2.9	0	0	99	0	0	1	0	0	0	0	0	0
SCID94	9.20E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID95	9.01E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID96	9.17E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID97	1.01E-06	3.0	0	0	98	0	0	2	0	0	0	0	0	0
SCID98	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID99	2.71E-07	1.9	0	0	7	93	0	0	0	0	0	0	0	0
SCID100	5.14E-07	2.1	0	0	19	78	0	2	0	0	0	0	0	0
SCID101	6.88E-07	2.5	0	0	56	43	0	1	0	0	0	0	0	0
SCID102	7.62E-07	2.7	0	0	80	20	0	0	0	0	0	0	0	0
SCID103	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0
SCID104	1.25E-06	3.2	0	0	82	9	0	7	2	0	0	0	0	0
SCID105	1.76E-06	3.5	0	0	84	0	0	8	0	0	8	0	0	0
SCID106	1.48E-06	3.3	0	0	91	0	0	8	0	0	1	1	0	0
SCID107	1.74E-06	3.3	0	0	80	0	0	3	1	0	16	0	0	0
SCID108	4.38E-06	4.2	0	0	4	0	0	14	0	0	0	81	0	0
SCID109	2.44E-06	2.5	0	50	1	0	0	6	0	0	0	43	0	0
SCID110	6.53E-06	7.5	0	14	0	0	0	86	0	0	0	0	0	0
SCID111	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0

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SCID112	8.82E-07	2.8	2	0	98	0	0	0	0	0	0	0	0	0
SCID113	1.62E-06	3.5	4	0	84	0	0	11	0	0	0	0	0	0
SCID114	2.14E-06	3.8	0	0	81	0	0	19	0	0	0	0	0	0
SCID115	1.40E-06	2.2	16	2	66	0	0	1	0	0	0	0	14	0
SCID117	4.84E-06	2.2	0	0	2	0	0	3	0	0	0	16	79	0
SCID118	9.00E-07	2.9	0	0	100	0	0	0	0	0	0	0	0	0