

Table S1. Environmental tracers results of October 2011 for the Mitchell River, its upper and low catchment tributaries and groundwater. *Tributary sampled far upstream of the confluence with the Mitchell River (sampled at the confluence otherwise).

River/Creek	ID	Dist. downstream (km)	Sampling (date + time)		Lat.	Lon.	EC ($\mu\text{S cm}^{-1}$)	^{222}Rn (Bq L^{-1})	^{222}Rn error ($\pm \text{Bq L}^{-1}$)	$^{87}\text{Sr}/^{86}\text{Sr}$
Rifle Ck.	Rifle	0	18.10.2011	08:20	-16.6648	145.3268	68.4	0.34	0.03	0.727298
Mitchell Rv.	M1	25.3	18.10.2011	12:20	-16.6013	145.1741	83.1	0.25	0.03	0.725236
Mary Ck.	Mary	26.5	18.10.2011	10:55	-16.5838	145.1834	54.4	1.30	0.09	0.735458
Mitchell Rv.	M2	28.0	18.10.2011	10:20	-16.5864	145.1579	78.0	0.66	0.05	0.726396
McLeod Ck.	McLeod	56.0	18.10.2011	09:00	-16.4968	145.0031	57.0	0.22	0.02	0.726395
Mitchell Rv.	60	57.0	17.10.2011	15:30	-16.5067	144.931	71	0.12	0.02	
	59	62.6	17.10.2011	15:25	-16.5347	144.9225	78	0.13	0.02	0.726134
	58	68.1	17.10.2011	15:20	-16.5607	144.8904	79	0.06	0.01	
	57	73.5	17.10.2011	15:15	-16.5810	144.8547	81	0.10	0.02	
	56	79.9	17.10.2011	15:08	-16.5771	144.8148	84	0.13	0.02	0.726652
	55	83.1	17.10.2011	15:04	-16.5849	144.7869	84	0.09	0.02	
	54	87.7	17.10.2011	15:00	-16.5634	144.7625	84	0.08	0.02	
	53	91.5	17.10.2011	14:57	-16.5778	144.7308	212	0.12	0.02	
	52	95.5	17.10.2011	14:53	-16.5760	144.6957	83	0.08	0.02	
	51	102.5	17.10.2011	14:47	-16.6116	144.665	85	0.07	0.01	0.727091
50	105.6	17.10.2011	14:43	-16.6273	144.6467	85	0.06	0.01		
Hodgkinson Rv.	49	110.2	17.10.2011	14:38	-16.6663	144.6515	358	0.17	0.02	
Mitchell Rv.	48	111.1	17.10.2011	14:34	-16.6749	144.6378	90	0.08	0.02	0.727108
	47	112.4	17.10.2011	14:31	-16.6796	144.6284	83	0.04	0.01	
	46	118.6	17.10.2011	14:27	-16.6311	144.6047	88	0.06	0.01	
	45	123.8	17.10.2011	14:23	-16.6221	144.5801	88	0.06	0.01	
	44	128.6	17.10.2011	14:18	-16.6141	144.5420	87	0.11	0.02	
	43	134.6	17.10.2011	14:13	-16.5908	144.4982	88	0.08	0.01	0.730063
	42	139.8	17.10.2011	14:09	-16.5511	144.4814	104	0.08	0.01	
	41	144.9	17.10.2011	14:05	-16.5301	144.4442	90	0.06	0.01	

	40	149.9	17.10.2011	11:50	-16.5062	144.4179	107	0.07	0.01	
	39	153.1	17.10.2011	11:42	-16.5144	144.3899	93	0.09	0.02	0.728688
	38	157.9	17.10.2011	11:36	-16.4922	144.3586	88	0.05	0.01	
	37	164.4	17.10.2011	11:33	-16.4704	144.3106	92	0.07	0.01	
	36	169.2	17.10.2011	11:29	-16.4755	144.2684	90	0.07	0.01	
	35	174.7	17.10.2011	11:26	-16.4584	144.2319	90	0.08	0.01	0.729051
	34	178.5	17.10.2011	11:23	-16.4700	144.2029	94	0.09	0.02	
	33	184.1	17.10.2011	11:19	-16.4980	144.1624	96	0.08	0.01	
	32	189.7	17.10.2011	11:15	-16.4931	144.1166	97	0.11	0.02	
	31	193.6	17.10.2011	11:11	-16.4785	144.0856	121	0.28	0.03	0.726369
	30	198.3	17.10.2011	11:07	-16.4576	144.0508	121	0.12	0.02	
	29	204.4	17.10.2011	11:03	-16.4059	144.0405	121	0.09	0.02	
	28	208.6	17.10.2011	10:59	-16.3872	144.0102	126	0.13	0.02	
	27	216.0	17.10.2011	10:55	-16.3646	143.9501	151	0.11	0.02	0.728646
	26	220.7	17.10.2011	10:20	-16.3720	143.9132	154	0.20	0.02	
	25	225.0	17.10.2011	10:17	-16.3846	143.8781	148	0.11	0.02	
	24	230.6	17.10.2011	10:13	-16.3837	143.8310	159	0.18	0.02	
	23	235.5	17.10.2011	10:09	-16.4217	143.8069	169	0.37	0.03	0.728377
	22	240.0	17.10.2011	10:05	-16.4441	143.7775	171	0.27	0.03	
	21	243.6	17.10.2011	10:00	-16.4673	143.7642	175	0.26	0.03	
	20	249.7	17.10.2011	09:57	-16.4803	143.7190	192	0.33	0.03	
Walsh Rv.	19	257.2	17.10.2011	09:52	-16.5381	143.7171	330	0.96	0.07	0.720153
Mitchell Rv.	18	254.6	17.10.2011	09:45	-16.5091	143.6953	196	0.85	0.06	0.727322
	17	260.0	17.10.2011	09:37	-16.5282	143.6715	242	0.64	0.05	0.724068
	16	265.1	17.10.2011	09:33	-16.5154	143.6262	225	0.28	0.03	
	15	270.5	17.10.2011	09:29	-16.5288	143.5845	221	0.14	0.02	
	14	275.7	17.10.2011	09:25	-16.5289	143.5382	210	0.48	0.04	
	13	279.2	17.10.2011	09:22	-16.5181	143.5122	205	0.60	0.05	0.725181
	12	284.4	17.10.2011	09:19	-16.5118	143.4743	203	0.34	0.03	
	11	290.9	17.10.2011	09:16	-16.5116	143.4362	201	0.33	0.03	
	10	296.1	17.10.2011	09:13	-16.4968	143.4043	205	0.13	0.02	

	9	301.2		17.10.2011	09:10	-16.4904	143.3665	206	0.27	0.03	
	8	306.7		17.10.2011	09:00	-16.4637	143.3251	209	0.28	0.03	0.725558
Lynd Rv.	7	308.6		17.10.2011	08:55	-16.4742	143.3122	585	0.22	0.02	0.712360
Mitchell Rv.	6	310.6		17.10.2011	08:50	-16.4527	143.2915	351	0.17	0.02	0.717745
	5	335.0		17.10.2011	08:45	-16.3823	143.1038	391	0.34	0.03	
	4	361.5		17.10.2011	08:35	-16.2139	142.9512	379	0.19	0.02	
	3	385.1		17.10.2011	08:30	-16.1267	142.7621	361	0.18	0.02	0.719556
Palmer Rv.	2	393.0		17.10.2011	08:25	-16.0683	142.7786	211	0.09	0.02	0.735039
Mitchell Rv.	1	400.0		17.10.2011	08:15	-16.0582	142.6529	329	0.22	0.02	0.721487
Walsh Rv.*	Walsh Up	-		18.10.2011	16:15	-17.1430	145.0955	152.9	0.48	0.04	0.719686
Name	ID	Depth (m)	Screen (m)	Sampling (date + time)		Lat.	Lon.	EC ($\mu\text{S cm}^{-1}$)	^{222}Rn (Bq L^{-1})	$^{222}\text{Rn error}$ ($\pm \text{Bq L}^{-1}$)	$^{87}\text{Sr}/^{86}\text{Sr}$
Well 1	B.1	~45.0	n.a.	13.10.2011	14:50	-16.5289	145.1364	1851	155.80	2.70	
Well 2	B.2	21.9	n.a.	15.10.2011	15:20	-16.7673	145.3504	3570	145.20	2.90	
Well 58	B.58	29.2	24-29.2	20.10.2011	12:10	-17.1209	145.1180	4610	236.60	3.60	
Well Chillagoe	B.Chill	~70.0	n.a.	20.10.2011	14:55	-17.1534	144.5202	635	5.20	0.30	
Well Wrotham Park	B. Wroth	81.0	46-52 75-81	20.10.2011	17:10	-16.6629	143.9974	141.8	0.90	0.10	