

Table S1. Average content of soil properties and contaminants in each district.

District	Clay (g/kg)	Slit (g/kg)	Sand (g/kg)	Organic matter (g/kg)	TN (mg/kg)	TP (mg/kg)
Baoan	116.84	178.69	668.84	122.83	257.57	566.33
Dapeng	169.06	234.14	541.49	108.79	195.55	442.29
Futian	105.59	201.36	651.19	35.42	737.90	499.26
Guangming	130.66	163.50	650.93	139.81	294.80	452.83
Longgang	165.02	242.97	537.87	38.06	378.79	602.09
Longhua	117.65	214.42	586.80	111.05	613.46	395.97
Luohu	109.11	238.15	601.54	30.55	553.44	572.66
Nanshan	114.08	156.03	714.76	30.99	592.95	509.03
Pingshan	103.37	217.83	606.04	77.72	361.47	967.57
Yantian	124.24	262.04	594.81	40.52	328.67	477.58

Table S2. Soil property detection results for various types of land use (mean).

Land-use type	Organic matter content (g/kg)	Silt content (g/kg)	Sand con- tent (g/kg)	Clay content (g/kg)	TP content (mg/kg)	TN con- tent (mg/kg)
Paddy fields	128.08	207.09	591.95	153.47	560.01	283.48
Irrigated land	130.90	206.95	607.93	123.00	602.62	326.62
Dry land	91.09	229.61	574.59	140.23	528.89	338.78
Orchards	101.91	206.89	594.56	142.74	561.71	350.64
Tea gardens	29.13	213.37	604.95	142.10	437.83	275.89
Other gardens	85.46	214.72	599.93	131.75	590.09	389.13
Forest land	83.20	226.68	581.02	147.17	535.29	316.26
Shrub land	90.48	207.30	600.97	148.53	488.78	313.16
Other forest land	82.76	206.45	617.39	127.52	564.52	424.45
Natural grassland	28.52	133.95	720.83	106.78	450.84	604.59
Artificial grassland	164.24	186.45	668.77	73.97	443.56	278.77
Other grassland	100.80	211.08	604.39	131.21	550.19	365.53
Wholesale and retail land	69.69	200.87	627.23	127.40	561.84	417.21
Accommodation and catering land	60.83	200.87	620.32	132.23	510.36	413.22
Business and financial land	41.05	186.52	672.44	111.50	516.18	510.86
Other commercial and service land	88.02	199.11	620.83	127.31	548.40	387.36
Industrial land	93.21	201.95	613.72	127.32	573.85	381.23
Mining land	74.91	208.87	603.49	137.75	580.96	375.63
Warehouse land	50.50	214.17	633.38	123.96	499.54	450.28
Urban residential land	59.38	201.80	631.96	124.93	524.67	492.00
Rural residential land	77.47	210.53	604.56	128.64	598.71	394.48
Institutional land	50.16	202.72	641.72	118.71	551.11	483.81
News and publishing land	95.06	231.21	611.27	115.92	565.31	502.54
Education land	59.53	200.57	622.32	129.35	531.51	472.73
Medical and charity land	55.98	208.68	615.10	130.53	547.02	490.10
Sports and entertainment land	78.40	202.89	639.83	103.71	507.27	539.09
Public facilities land	67.21	203.65	620.65	127.85	542.03	424.33
Parks and green land	68.73	201.49	630.73	125.58	542.23	406.21
Scenic facilities land	44.34	174.54	666.84	119.01	486.59	546.76
Military facilities land	84.32	218.57	605.50	123.93	463.68	527.04

Land-use type	Organic matter content (g/kg)	Silt content (g/kg)	Sand con- tent (g/kg)	Clay content (g/kg)	TP content (mg/kg)	TN con- tent (mg/kg)
Correctional facilities land	69.38	219.48	586.57	134.99	634.54	575.18
Religious land	57.37	205.04	632.97	122.13	587.29	443.33
Funeral land	89.43	214.47	587.32	135.73	537.40	379.13
Railway land	67.74	224.81	582.56	144.31	508.46	464.93
Highway land	69.86	211.10	603.85	133.11	541.08	416.22
Street land	72.31	198.25	632.10	123.42	562.71	439.06
Rural roads	106.86	201.73	612.29	132.65	562.91	333.85
Airport land	25.80	163.38	707.01	108.91	563.77	178.72
Port and wharf land	21.87	192.44	725.70	92.04	481.96	417.75
Pipeline transportation land	44.48	190.39	627.07	132.87	536.49	291.63
River water area	58.76	188.47	655.89	117.49	608.37	321.48
Reservoir water area	91.56	208.22	603.38	132.63	634.98	366.90
Pit pond water area	76.29	195.07	634.65	125.81	555.05	333.16
Coastal mudflats	33.98	185.29	678.22	116.87	481.98	434.18
Inland mudflats	114.38	207.22	620.39	125.48	581.31	361.18
Ditch	113.39	197.34	617.16	127.40	552.03	337.64
Water engineering land	63.91	190.40	647.50	121.66	566.07	342.21
Idle land	65.48	200.77	619.83	131.00	611.46	397.03
Facility agricultural land	90.23	212.10	565.68	149.97	554.63	275.20
Bare land	85.61	205.45	607.20	132.75	557.68	382.43

Table S3. Physical value of nonpoint source pollution reduction services in each district.

District	Nonpoint source pol- lution reduction ser- vice (TN) (t)	Nonpoint source pol- lution reduction ser- vice (TP) (t)	Per capita nonpoint source pollution reduction service (TN) (t/hm ²)	Per capita nonpoint source pollution reduc- tion service (TP) (t/hm ²)
Baoan	1469.22	3238.47	0.04	0.09
Dapeng	3247.69	7296.23	0.11	0.25
Futian	1249.58	815.39	0.17	0.11
Guangming	1004.05	1404.52	0.06	0.09
Longgang	4399.80	7043.18	0.11	0.18
Longhua	2239.18	1600.34	0.13	0.09
Luohu	2033.02	2141.85	0.26	0.28
Nanshan	1655.96	1477.15	0.09	0.08
Pingshan	1935.89	4988.27	0.12	0.30
Yantian	1457.77	2091.25	0.20	0.28

Table S4. Drivers of nonpoint source pollution reduction services for major land-use types.

First-level indicators	Second-level indicators	Forest land				Industrial land				Street and town residential land			
		Surface pollution reduction		Surface pollution reduction		Surface pollution reduction		Surface pollution reduction		Surface pollution reduction		Surface pollution reduction	
		TN		TP		TN		TP		TN		TP	
		<i>q</i> -value	<i>p</i> -value	<i>q</i> -value	<i>p</i> -value	<i>q</i> -value	<i>p</i> -value	<i>q</i> -value	<i>p</i> -value	<i>q</i> -value	<i>p</i> -value	<i>q</i> -value	<i>p</i> -value
Climate	Annual precipitation	0.3881	0.0000	0.4397	0.0000	0.3959	0.0000	0.3870	0.0043	0.3822	0.0074	0.3982	0.0000
	Average annual temperature	0.0681	0.0000	0.1053	0.0000	0.0561	0.0000	0.1228	0.0000	0.1031	0.0000	0.1550	0.0000
Soil properties	Content of sand particles	0.1216	0.0000	0.1293	0.0000	0.1785	0.0000	0.1719	0.0000	0.1748	0.0000	0.1779	0.0000
	Content of clay particles	0.0761	0.0000	0.0760	0.0000	0.0036	0.0000	0.0184	0.0000	0.0107	0.0000	0.0046	0.0000
	Content of silt particles	0.0422	0.0000	0.0600	0.0000	0.0937	0.0000	0.0728	0.0000	0.0512	0.0000	0.0560	0.0000
	Content of organic matter	0.0982	0.0000	0.0353	0.0000	0.0293	0.0000	0.0266	0.0000	0.0679	0.0000	0.0472	0.0000
Topography	Elevation	0.5091	0.0000	0.5601	0.0000	0.6057	0.0000	0.5385	0.0000	0.5832	0.0000	0.5635	0.0000
	Slope	0.6644	0.0000	0.7920	0.0000	0.6275	0.0000	0.6461	0.0000	0.6526	0.0000	0.6714	0.0000
Habitat quality	Normalized difference vegetation index, NDVI	0.6540	0.0000	0.6802	0.0000	0.6362	0.0000	0.6505	0.0000	0.6668	0.0000	0.6893	0.0000
	Net primary productivity, NPP	0.3711	0.0000	0.3642	0.0000	0.3639	0.0000	0.3632	0.0000	0.3537	0.0000	0.3532	0.0000
Ecosystem type	Ecosystem type	0.3659	0.0000	0.3837	0.0000	0.3934	0.0000	0.3648	0.0000	0.3744	0.0000	0.4154	0.0000

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S1. Interaction detection results for non-point source pollution reduction service TN (forest land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S2. Interaction detection results for non-point source pollution reduction service TP (forest land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S3. Interaction detection results for non-point source pollution reduction service TN (industrial land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S4. Interaction detection results for non-point source pollution reduction service TP (industrial land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S5. Interaction detection results for non-point source pollution reduction service TN (street and town residential land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.

Factor	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1											
X2											
X3											
X4											
X5											
X6											
X7											
X8											
X9											
X10											
X11											

Figure S6. Interaction detection results for non-point source pollution reduction service TP (street and town residential land); blue: nonlinear enhancement relation; green: two-factor enhancement relationship.