Supplemental Material

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MATERIALS AND METHODS

Field Methods

A plastic trowel was used to sample soil where exposed between plants within 0.5 cm of the surface. Voids between marbles in dust trap allows dust particles to fall or to be washed into a 2*l* polycarbonate bottle attached to the spout of the funnel (Fig. SI-1), thus eliminating the possibility of re-entrainment of particles.

Analytical Procedures

A mixture of 9.5 ml of 18 MΩ D.I. water and 1.0 ml of 70% distilled HNO_3 was added to 0.3-0.7 g of soil. Samples then sat in a 65° C hot bath for 30 minutes, sonicated for 15 minutes, shaken for 12 hours, and then chilled to 4° C for 24 h. Digested solutions were then warmed to room temperature for 1 h before diluting 0.2 ml of particle-free supernatant with 10 ml of diluting solution, which contained internal standards Rh, In, and Bi. Reproducibility of sample homogenization and digestion was verified by analyzing soils digested in triplicate every 10-15 samples (n=36), and supernatant from the three digestions were also analyzed in triplicate. Most coefficients of variation (CV) for samples analyzed in triplicate are between 1 and 7% for metals of interest; the average CV for all 36 samples analyzed in triplicate is 9%, which is sufficient for this study (Atteia et al., 1994). However, even with thorough homogenization, 9 samples tested in triplicate yielded larger CVs for Pb, which may be attributable to strong Pb inhomogeneities among soil particles within individual samples. For plant samples, 0.01-0.05 g of root and shoot material was placed in a Teflon digestion vessel with 1 ml of HNO_3 (Jones, 2001). Digestion vessels were transferred to an 80° C hot bath for 1 hr, cooled to room temperature, and then 1 ml of 35% H_2O_2 was added and vessels were transferred back to the hot bath for one hour (Jones, 2001). Once digestions cooled to room temperature, 0.2 ml of supernatant was diluted with 10 ml of diluting solution for analysis by ICP-MS (Table SI3). Blanks and standards were analyzed at regular intervals throughout sample runs. Instrumentation accuracy for soil and plant analyses was verified with certified reference materials PACS-2 (marine sediment) and ERM-CD281 (rye grass), respectively.

Figure SI1. One of four dust traps deployed on the Junin Plain between June 2016 and June 2017. Polycarbonate traps are 43 cm in diameter and filled with 6 cm of glass marbles on a nylon mesh following design described by Reheis and Kihl (1995). Two-liter polycarbonate bottle collects sediment when washed through marbles.

Table SI-1
Metal Concentrations in Surface Soil Samples from the Junín Basin

sample ID	*material*	*latitude (°)*	*longitude (°)*	*altitude (masl)*	*Al (mg/kg)*	*Zn (mg/kg)*	*Cu (mg/kg)*	*As (mg/kg)*	*Ag (mg/kg)*	*Pb (mg/kg)*
A1	surface soil	-10.8494	-76.2398	4113	9520.160	67.098	26.190	12.533	0.412	104.100
A10	surface soil	-10.8757	-76.2546	4104	9208.912	84.730	142.522	151.750	0.769	4570.718
A11	surface soil	-10.8723	-76.2511	4104	8004.466	63.841	46.192	47.408	0.397	368.185
A12	surface soil	-10.8856	-76.2534	4100	5970.083	80.695	86.339	73.601	0.404	2596.502
A13	surface soil	-10.9009	-76.2586	4100	5690.980	304.842	66.188	64.890	0.289	261.309
A14	surface soil	-10.9207	-76.2629	4097	6876.221	405.367	99.039	47.472	0.387	3082.480
A15	surface soil	-10.9266	-76.2576	4127	16561.032	251.270	104.695	111.943	0.986	4065.588
A16	surface soil	-10.9317	-76.2532	4118	8312.403	103.897	50.861	39.437	0.208	119.956
A17	surface soil	-10.9493	-76.2472	4111	7176.464	183.171	38.857	44.626	0.238	169.865
A18	surface soil	-10.9635	-76.2385	4104	7278.079	47.853	90.850	184.887	0.690	797.641
A19	surface soil	-10.9771	-76.2420	4120	10763.536	80.702	28.445	66.161	0.067	206.633
A2	surface soil	-10.8511	-76.2430	4111	6684.054	20.184	4.507	4.913	0.241	23.041
A20	surface soil	-10.9792	-76.2520	4229	9247.473	105.736	20.294	32.852	0.180	539.225
A21	surface soil	-10.9785	-76.2525	4227	9173.297	98.938	41.544	84.735	0.380	177.511
A22	surface soil	-10.9439	-76.2777	4083	4107.022	3835.623	394.859	489.189	3.921	7809.550
A23	surface soil	-10.9642	-76.2580	4092	7218.889	133.201	26.431	62.719	0.330	142.787
A24	surface soil	-10.9365	-76.2846	4092	4889.994	69.030	26.580	35.403	0.258	68.037
A25	surface soil	-10.9384	-76.2852	4093	4353.098	255.418	84.728	57.947	1.137	7843.118
A26	surface soil	-10.9393	-76.2881	4098	9938.601	80.768	45.774	93.802	0.468	1390.939
A27	surface soil	-10.9387	-76.2896	4099	7909.041	140.991	37.139	33.766	0.381	207.204
A28	surface soil	-10.9329	-76.2912	4100	10802.229	116.337	64.755	107.764	0.397	833.241
A29	surface soil	-10.9366	-76.2912	4097	3390.729	180.285	23.788	45.381	0.712	2480.866
A3	surface soil	-10.8505	-76.2442	4111	6026.582	76.470	69.243	69.003	0.433	1605.905
A30	surface soil	-10.9399	-76.3007	4105	11048.912	32.241	27.684	63.702	0.253	399.592
A31	surface soil	-10.9508	-76.3121	4118	6830.014	165.523	58.776	131.996	0.456	2698.708
A32	surface soil	-10.9311	-76.3060	4119	10301.389	79.037	42.479	78.731	0.296	2509.383
A33	surface soil	-10.9271	-76.3034	4118	10686.885	78.966	65.798	130.985	0.499	3320.744
A34	surface soil	-10.9443	-76.3001	4113	11328.016	46.725	36.891	68.842	0.247	133.279
A35	surface soil	-10.9234	-76.2949	4108	11753.017	176.429	45.196	65.165	0.268	167.080
A36	surface soil	-10.9190	-76.2932	4108	12119.040	27.100	20.103	28.476	0.144	81.528
A37	surface soil	-10.9126	-76.2943	4115	9293.263	20.072	15.679	7.178	0.077	95.448
A38	surface soil	-10.9094	-76.2971	4116	9751.098	84.776	58.146	78.123	0.191	177.086
A39	surface soil	-10.8951	-76.3001	4116	6204.821	1906.565	240.133	20.238	3.997	21299.460
A4	surface soil	-10.8523	-76.2444	4110	7454.177	57.176	110.806	85.816	0.600	2070.767
A40	surface soil	-10.8933	-76.2980	4119	10021.495	63.981	57.787	31.599	0.312	111.811
A41	surface soil	-10.8800	-76.2957	4137	9907.147	26.682	16.809	16.121	0.126	51.024
A42	surface soil	-10.8810	-76.2954	4149	6489.561	53.951	72.528	28.005	0.511	2761.655
A43	surface soil	-10.8831	-76.2936	4163	7351.505	287.411	189.122	118.565	1.238	10496.902
A44	surface soil	-10.8809	-76.2881	4127	8206.539	60.326	181.680	183.322	0.845	4258.980
A45	surface soil	-10.8825	-76.2851	4125	8059.574	54.102	117.685	125.966	0.499	3318.592
A46	surface soil	-10.8839	-76.2798	4116	9417.716	52.743	97.296	94.133	0.458	285.642
A47	surface soil	-10.8818	-76.2757	4117	7648.510	64.181	314.635	410.199	2.094	520.376
A48	surface soil	-10.8671	-76.2915	4156	8945.304	89.616	134.794	173.973	0.791	3459.110
A49	surface soil	-10.8655	-76.2947	4158	7875.062	411.168	184.975	237.565	2.070	9371.504
A5	surface soil	-10.8542	-76.2451	4111	5194.037	3482.466	2650.132	181.479	22.802	7848.519
A50	surface soil	-10.8605	-76.2950	4159	4993.199	1040.147	188.367	65.397	2.390	888.427
A51	surface soil	-10.8561	-76.2936	4162	8675.518	147.863	124.163	169.031	0.483	3876.327
A52	surface soil	-10.8802	-76.2930	4150	11535.734	218.717	188.219	150.056	0.542	6926.724
A53	surface soil	-10.8504	-76.2944	4169	5305.513	889.169	270.824	630.603	3.527	10462.947
A54	surface soil	-10.8404	-76.2881	4150	9340.207	207.497	169.019	118.982	1.142	5337.741
A55	surface soil	-10.8412	-76.2872	4162	7680.219	193.608	306.311	435.716	2.084	9602.131
A56	surface soil	-10.8268	-76.2837	4158	7167.756	528.540	716.999	171.459	6.013	8564.979
A57	surface soil	-10.8044	-76.2745	4153	2532.863	370.418	711.115	181.332	4.226	85.521
A6	surface soil	-10.8549	-76.2442	4112	7565.190	42.254	193.955	231.650	1.060	4254.294
A64-RR EMB	surface soil	-10.6709	-76.2663	4338	1728.284	715.662	320.453	226.358	7.050	243.548
A7	surface soil	-10.8570	-76.2469	4110	8042.992	1296.236	652.515	125.729	10.477	6088.599
A8	surface soil	-10.8574	-76.2456	4111	5903.240	23.612	10.025	8.228	0.134	29.522
A9	surface soil	-10.8607	-76.2463	4107	7227.962	119.627	122.234	147.379	0.771	3149.294
B1	surface soil	-11.1652	-76.0381	4097	523.151	114.432	22.575	3.958	0.064	12.678
B10	surface soil	-11.1575	-76.0506	4185	7152.214	212.784	14.879	20.575	0.264	103.551
B11	surface soil	-11.1560	-76.0490	4141	5784.555	132.217	10.810	14.091	0.131	84.094
B12	surface soil	-11.1552	-76.0460	4100	487.253	104.343	25.518	5.398	0.160	64.940
B14	surface soil	-11.1481	-76.0516	4107	1309.383	142.639	49.792	6.799	0.404	235.988
B15	surface soil	-11.1436	-76.0512	4100	228.385	103.512	20.786	6.298	0.116	29.338
B16	surface soil	-11.1419	-76.0523	4101	248.179	43.246	11.755	11.185	0.041	6.508
B17	surface soil	-11.1419	-76.0554	4101	18.136		0.107	0.006	0.001	
B18	surface soil	-11.1442	-76.0586	4106	200.981	117.177	14.634	4.099	0.112	22.362
B2	surface soil	-11.1636	-76.0388	4099	246.938	82.033	18.516	2.663	0.119	17.937
B21	surface soil	-11.1442	-76.0650	4107	788.770	50.895	15.838	2.728	0.247	151.769
B22	surface soil	-11.1456	-76.0690	4108	179.946	76.017	12.110	5.397	0.055	9.552
B23	surface soil	-11.1449	-76.0713	4110	352.982	206.522	34.467	4.502	0.236	84.329
B25	surface soil	-11.1291	-76.0958	4145	8793.548	81.951	8.887	17.243	0.076	86.035
B26	surface soil	-11.1272	-76.0978	4179	9214.552	64.042	13.280	28.026	0.118	196.310
B27	surface soil	-11.1257	-76.1002	4205	7023.413	66.623	8.154	24.514	0.084	71.412
B29	surface soil	-11.1234	-76.1007	4139	2677.156	166.192	12.361	9.081	0.118	46.685
B3	surface soil	-11.1638	-76.0413	4102	208.772	109.661	23.640	4.831	0.045	4.815
B30	surface soil	-11.1202	-76.1032	4161	7585.982	94.288	15.291	24.464	0.141	123.940
B31	surface soil	-11.1177	-76.1053	4150	8533.128	91.522	12.159	30.821	0.122	98.406
B32	surface soil	-11.1167	-76.1073	4149	7277.987	51.284	12.199	13.774	0.091	101.704
B33	surface soil	-11.1161	-76.1087	4114	6607.566	125.671	15.058	15.647	0.183	119.914
B35	surface soil	-11.0812	-76.1486	4136	6590.943	50.102	8.704	10.900	0.105	65.058
B36	surface soil	-11.0777	-76.1507	4174	7238.298	51.970	16.415	20.597	0.113	104.156
B37	surface soil	-11.0725	-76.1530	4169	5181.751	32.970	6.912	10.399	0.024	41.630
B38	surface soil	-11.0653	-76.1570	4191	7477.031	52.942	11.976	19.056	0.058	93.674
B39	surface soil	-11.0625	-76.1592	4239	6239.659	90.043	28.165	28.183	0.236	324.936
B40	surface soil	-11.0569	-76.1643	4161	4938.391	152.670	21.921	36.421	0.187	125.903
B41	surface soil	-11.0555	-76.1673	4169	2972.166	148.833	13.518	14.387	0.093	136.694
B42	surface soil	-11.0527	-76.1708	4155	8038.230	101.021	17.279	30.298	0.136	110.368
B43	surface soil	-11.0509	-76.1734	4162	6282.267	38.109	14.121	26.004	0.241	93.451
B44	surface soil	-11.0495	-76.1778	4153	6747.052	55.077	20.856	28.335	0.406	143.146
B46	surface soil	-11.0464	-76.1817	4139	6614.136	38.411	15.379	27.854	0.118	116.127
B47	surface soil	-11.0408	-76.1867	4116	6365.758	161.494	18.841	11.475	0.068	2028.336
B48	surface soil	-11.0395	-76.1846	4107	5410.793	93.125	12.302	31.077	0.034	73.736
B49	surface soil	-11.0438	-76.1812	4102	5641.228	96.805	20.461	37.656	0.119	101.804
B5	surface soil	-11.1666	-76.0444	4176	5907.099	68.438	12.056	18.252	0.161	63.422
B51	surface soil	-11.0446	-76.1805	4106	5362.300	139.282	22.613	28.465	0.258	95.269
B52	surface soil	-11.0451	-76.1799	4103	7439.842	81.952	21.773	35.627	0.074	106.693
B53	surface soil	-11.0453	-76.1793	4103	5427.494	65.409	18.518	23.002	0.040	95.145
B54	surface soil	-11.0458	-76.1780	4106	81.996	14.953	0.275	4.075	0.057	1.710
B56	surface soil	-11.0803	-76.1474	4100	4357.783	40.350	12.548	10.977	0.403	73.498
B6	surface soil	-11.1675	-76.0471	4260	6911.713	78.265	8.733	18.599	0.107	56.530
B7	surface soil	-11.1661	-76.0496	4253	8614.913	124.747	8.416	18.064	0.097	73.180
B8	surface soil	-11.1630	-76.0504	4234	7539.149	115.831	17.685	14.574	0.192	169.570
B9	surface soil	-11.1598	-76.0507	4209	6288.752	130.532	12.714	26.929	0.153	141.549
C1	surface soil	-11.1384	-75.9985	4086	4543.651	35.774	5.880	14.945	0.012	22.571
C10	surface soil	-11.1634	-76.0079	4108	2964.469	7.052	31.957	31.102	0.074	42.310
C11	surface soil	-11.1626	-76.0098	4108	2760.730	13.406	53.420	17.974	0.201	55.742
C12	surface soil	-11.1637	-76.0098	4106	3301.218	10.850	31.967	37.582	0.090	63.870
C13	surface soil	-11.1621	-76.0077	4110	386.251	164.119	23.736	5.757	0.199	15.757
C14	surface soil	-11.1638	-76.0109	4106	5012.506	68.423	13.058	43.105	0.111	320.689
C15	surface soil	-11.1628	-76.0113	4106	1583.933	150.419	25.770	7.069	0.369	140.057
C16	surface soil	-11.1639	-76.0122	4103	1069.786	68.302	16.468	15.482	0.095	85.407
C17	surface soil	-11.1630	-76.0124	4104	2725.281	63.484	9.034	25.993	0.053	105.041
C18	surface soil	-11.1640	-76.0128	4106	1199.195	103.434	15.650	21.302	0.130	44.574
C19	surface soil	-11.1632	-76.0133	4106	1892.987	67.629	16.874	12.555	0.115	129.523
C2	surface soil	-11.1352	-75.9993	4104	1709.508	28.427	5.899	21.122	0.017	54.687
C20	surface soil	-11.1636	-76.0161	4102	377.013	66.787	9.402	10.727	0.064	58.750
C21	surface soil	-11.1640	-76.0180	4100	1053.702	126.365	17.559	8.731	0.176	51.782
C22	surface soil	-11.1650	-76.0178	4104	3125.026	53.200	8.566	12.530	0.028	19.186
C23	surface soil	-11.1663	-76.0196	4105	327.245	39.691	7.272	17.535	0.026	7.569
C24	surface soil	-11.1672	-76.0222	4102	1012.558	47.030	8.846	53.287	0.002	15.500
C25	surface soil	-11.1679	-76.0245	4101	3184.108	50.008	12.904	29.724	0.035	26.741
C26	surface soil	-11.1679	-76.0276	4103	2384.006	54.310	12.619	10.664	0.035	90.131
C27	surface soil	-11.1690	-76.0314	4099	8679.194	66.349	16.641	27.127	0.000	57.752
C28	surface soil	-11.1678	-76.0337	4098	8697.202	77.480	16.735	16.593	0.029	69.588
C29	surface soil	-11.1687	-76.0365	4106	1822.458	15.677	2.018	1.072	0.028	9.299
C3	surface soil	-11.1407	-75.9982	4106	2916.588	91.121	13.099	19.619	0.070	33.928
C30	surface soil	-11.1657	-76.0418	4106	3927.927	170.854	26.447	37.337	0.028	64.444
C31	surface soil	-11.0096	-76.0122	4117	5276.723	109.732	17.741	7.714	0.031	32.205
C32	surface soil	-11.0151	-76.0088	4113	5416.428	22.136	3.684	9.938	0.018	16.409

Table SI-1

Metal Concentrations in Surface Soil Samples from the Junín Basin

sample ID	*material*	*latitude (°)*	*longitude (°)*	*altitude (masl)*	*Al (mg/kg)*	*Zn (mg/kg)*	*Cu (mg/kg)*	*As (mg/kg)*	*Ag (mg/kg)*	*Pb (mg/kg)*
C33	surface soil	-11.0299	-75.9991	4134	5667.355	22.282	5.764	14.505	0.032	54.824
C34	surface soil	-11.0360	-75.9975	4107	6665.500	30.915	5.693	9.623	0.025	120.805
C35	surface soil	-11.0444	-75.9955	4102	3300.850	12.036	77.976	107.990	1.085	463.817
C36	surface soil	-11.0489	-75.9999	4112	4453.741	101.329	20.059	12.503	0.152	203.794
C37	surface soil	-11.0528	-76.0012	4116	4136.400	46.984	8.404	20.935	0.135	55.651
C38	surface soil	-11.0641	-76.0013	4118	2229.592	35.980	5.787	2.949	0.039	29.528
C39	surface soil	-11.0680	-76.0005	4101	4793.311	120.125	21.100	17.556	0.068	79.951
C4	surface soil	-11.1417	-75.9973	4107	2282.470	67.747	5.278	2.518	0.032	16.662
C40	surface soil	-11.0764	-75.9983	4102	5122.770	188.458	25.400	25.219	0.133	76.346
C41	surface soil	-11.0789	-75.9980	4101	3934.991	120.790	12.806	64.931	0.041	59.816
C42	surface soil	-11.0837	-75.9976	4106	2671.731	124.079	20.073	6.428	0.315	114.150
C43	surface soil	-11.0961	-75.9965	4126	1634.727	112.072	10.293	3.511	0.199	69.259
C44	surface soil	-11.1093	-75.9949	4111	2001.205	734.053	49.495	15.286	1.269	1540.593
C45	surface soil	-11.1157	-75.9941	4114	3871.385	552.102	36.998	27.497	0.796	5616.605
C46	surface soil	-11.1216	-75.9936	4111	2560.357	553.098	40.394	18.789	0.536	7202.593
C47	surface soil	-11.1255	-75.9925	4116	7008.512	171.064	11.210	11.710	0.225	398.157
C48	surface soil	-11.1286	-75.9884	4129	6740.612	30.507	8.092	13.883	0.070	96.595
C49	surface soil	-11.1318	-75.9922	4108	2925.527	503.782	32.404	19.418	0.712	894.007
C5	surface soil	-11.1449	-75.9976	4108	3335.916	46.248	7.582	18.934	0.054	47.495
C50	surface soil	-11.1384	-75.9985	4104	6699.364	48.252	7.429	28.660	0.093	77.687
C51	surface soil	-11.1356	-75.9917	4111	3053.713	343.293	27.558	21.155	0.469	3515.469
C52	surface soil	-11.1711	-75.9888	4125	4998.503	45.603	7.522	10.248	0.061	44.833
C53	surface soil	-11.1676	-76.0019	4109	1410.749	75.310	11.056	5.756	0.251	86.224
C54	surface soil	-11.1681	-76.0010	4111	2235.382	46.529	4.298	12.734	0.043	109.622
C55	surface soil	-11.1687	-76.0006	4115	853.721	46.686	6.927	3.987	0.064	29.902
C56	surface soil	-11.1711	-75.9889	4121	3157.380	81.852	9.793	10.318	0.100	47.834
C57	surface soil	-11.1712	-75.9895	4117	2163.176	142.927	13.216	20.720	0.149	74.135
C6	surface soil	-11.1471	-76.0002	4110	5128.049	50.303	8.207	20.712	0.071	326.502
C7	surface soil	-11.1492	-76.0023	4112	3530.038	28.843	4.490	10.611	0.041	40.649
C8	surface soil	-11.1525	-76.0044	4110	5456.716	27.213	3.342	15.211	0.042	131.447
C9	surface soil	-11.1556	-76.0055	4111	904.701	40.886	16.963	5.273	0.133	37.895
D1	surface soil	-10.9160	-75.9476	4180	12010.220	6.756	2.658	6.389	0.111	41.679
D10	surface soil	-10.9055	-76.0265	4226	6042.482	458.748	6.182	26.670	0.445	474.389
D11	surface soil	-10.9106	-76.0399	4137	6058.259	35.016	7.252	9.971	0.072	69.424
D12	surface soil	-11.0158	-76.0056	4132	8879.987	25.981	12.025	17.129	0.157	86.762
D14	surface soil	-11.0161	-76.0091	4114	4015.449	176.194	16.296	9.120	0.138	96.554
D16	surface soil	-11.0086	-76.0113	4135	5250.769	16.300	4.154	5.925	0.003	17.837
D17	surface soil	-10.9907	-76.0232	4121	8330.066	29.982	4.680	16.601	0.033	35.267
D18	surface soil	-10.9868	-76.0313	4129	6543.912	20.230	4.561	7.499	0.045	26.483
D2	surface soil	-10.9005	-75.9913	4377	11641.188	7.729	4.581	2.713	0.039	5.462
D20	surface soil	-10.9806	-76.0422	4123	5080.080	10.933	3.606	6.440	0.047	25.457
D21	surface soil	-10.9678	-76.0355	4122	6937.144	41.350	6.603	11.423	0.061	49.625
D22	surface soil	-10.9683	-76.0374	4101	2693.343	103.795	18.769	8.593	0.311	78.301
D24	surface soil	-10.9580	-76.0389	4132	7579.230	53.488	6.927	12.755	0.031	45.414
D25	surface soil	-10.9514	-76.0425	4126	8046.902	50.682	6.516	21.020	0.034	54.404
D26	surface soil	-10.9516	-76.0443	4106	4288.836	107.363	14.101	22.950	0.128	155.336
D27	surface soil	-10.9422	-76.0478	4117	7762.319	134.305	10.581	17.526	0.068	105.208
D29	surface soil	-10.9428	-76.0489	4109	5664.893	216.512	104.367	28.386	0.365	269.402
D30	surface soil	-10.9327	-76.0539	4134	8449.951	86.785	7.238	12.276	0.056	60.008
D31	surface soil	-10.9319	-76.0588	4115	11672.817	99.198	10.786	32.621	0.186	99.038
D32	surface soil	-10.9314	-76.0644	4116	6372.007	90.623	11.076	22.913	0.130	812.479
D33	surface soil	-10.9236	-76.0520	4173	10630.465	33.454	4.714	6.060	0.038	48.705
D34	surface soil	-10.9212	-76.0509	4193	15767.682	36.312	5.819	10.670	0.041	50.206
D35	surface soil	-10.9291	-76.0729	4115	5932.964	80.713	5.876	17.686	0.169	66.124
D37	surface soil	-10.9236	-76.0713	4115	6905.385	197.834	85.348	29.342	0.267	473.210
D38	surface soil	-10.9218	-76.0709	4119	5745.132	126.541	9.754	32.689	0.181	117.061
D39	surface soil	-10.9151	-76.0577	4178	4827.193	24.797	8.958	17.188	0.057	97.152
D40	surface soil	-10.9139	-76.0531	4194	10176.687	31.464	7.074	18.714	0.085	46.065
D41	surface soil	-10.9122	-76.0587	4175	13582.835	63.015	12.122	10.076	0.078	73.196
D42	surface soil	-10.9090	-76.0625	4161	9850.915	40.061	8.520	16.248	0.068	70.753
D43	surface soil	-10.9072	-76.0658	4149	12906.825	61.918	7.073	12.758	0.033	65.737
D45	surface soil	-10.9057	-76.0715	4111	3518.532	190.953	4.124	2.360	0.153	44.464
D46	surface soil	-10.8994	-76.0728	4121	6999.830	50.948	8.547	29.209	0.158	65.525
D47	surface soil	-10.8951	-76.0819	4120	6487.725	43.181	6.872	15.468	0.015	61.760
D49	surface soil	-10.8976	-76.0956	4112	5032.589	521.050	39.621	26.324	0.360	3562.541
D5	surface soil	-10.8944	-76.0857	4120	6034.902	54.710	6.550	14.346	0.107	53.652
D50	surface soil	-10.8808	-76.0938	4144	5636.451	40.555	12.021	43.750	0.141	116.361
D51	surface soil	-10.8840	-76.0959	4131	5352.333	46.648	10.430	24.893	0.161	90.922
D53	surface soil	-10.8748	-76.1069	4134	3879.739	126.486	13.843	12.666	0.169	114.332
D54	surface soil	-10.8722	-76.1055	4139	5973.576	55.094	8.030	10.804	0.042	53.288
D56	surface soil	-10.8658	-76.1156	4152	5586.451	100.913	20.980	77.085	0.227	121.909
D58	surface soil	-10.8685	-76.1173	4138	6104.029	139.095	17.944	45.997	0.287	2001.962
D6	surface soil	-10.8579	-75.9736	4415	8758.447	162.705	4.243	11.039	0.195	99.547
D7	surface soil	-10.8681	-75.9900	4330	8681.804	204.460	4.282	15.282	0.091	110.504
D9	surface soil	-10.8794	-76.0014	4361	8958.845	152.397	6.453	32.801	0.133	115.336
E1	surface soil	-10.7174	-76.2635	4339	8292.604	264.721	114.119	83.353	0.766	238.473
E10	surface soil	-10.5574	-76.1909	3915	2039.536	121.909	12.738	14.171	0.280	130.560
E11	surface soil	-10.6420	-76.2033	3958	4691.876	117.305	23.587	27.086	1.190	277.319
E12	surface soil	-10.6446	-76.2197	4052	6268.310	243.319	41.337	32.517	2.653	616.048
E13	surface soil	-10.7004	-76.3129	4227	5285.890	65.021	109.099	98.336	1.378	1158.181
E14	surface soil	-10.6845	-76.3224	4200	5944.846	172.571	93.381	60.103	0.862	4044.188
E15	surface soil	-10.6482	-76.3019	4281	4879.403	171.635	35.064	17.738	0.257	206.423
E16	surface soil	-10.6701	-76.3288	4202	3130.789	122.298	26.140	33.112	1.952	1436.156
E17	surface soil	-10.6058	-76.3336	4354	2317.197	179.181	22.202	33.367	0.250	2633.420
E18	surface soil	-10.6063	-76.3237	4345	7336.920	36.391	8.017	17.983	0.042	34.633
E19	surface soil	-10.6566	-76.2846	4337	12645.995	78.543	59.549	115.096	0.863	3269.907
E2	surface soil	-10.6943	-76.2327	4364	3937.432	136.386	47.764	55.675	0.294	2472.195
E20	surface soil	-10.6245	-76.1970	3461	3706.436	395.771	43.567	32.228	2.074	9051.284
E21	surface soil	-10.6396	-76.2067	3959	4261.047	419.948	70.134	64.219	2.304	2292.688
E22	surface soil	-10.6433	-76.2195	4044	5783.291	176.933	37.820	35.073	1.096	4779.466
E23	surface soil	-10.6554	-76.2368	4199	3379.439	287.102	48.901	57.389	1.600	451.996
E24	surface soil	-10.6591	-76.2442	4317	3770.348	282.346	48.515	83.735	1.157	6386.959
E25	surface soil	-10.6248	-76.1986	3918	7758.076	350.965	29.221	22.543	0.830	594.736
E26	surface soil	-10.6599	-76.2445	4323	3941.248	240.147	190.020	107.128	1.645	8425.137
E28	surface soil	-10.6651	-76.2748	4387	6344.379	41.949	85.795	54.319	0.986	282.250
E29	surface soil	-10.6621	-76.2808	4389	5854.611	58.367	69.052	44.039	0.631	278.874
E3	surface soil	-10.6921	-76.2199	4256	3570.519	213.215	58.938	40.616	1.256	350.952
E30	surface soil	-10.6509	-76.2622	4243	5925.518	225.574	39.215	37.994	0.465	4179.120
E31	surface soil	-10.6405	-76.2673	4122	3491.595	98.601	30.210	25.197	0.379	141.388
E32	surface soil	-10.6343	-76.2666	4122	1988.531	206.022	17.395	22.583	0.373	129.460
E33	surface soil	-10.6449	-76.2668	4171	6216.149	42.658	56.577	16.683	0.445	145.967
E34	surface soil	-10.6226	-76.2707	4032	5751.033	90.104	21.708	13.548	1.593	154.059
E35	surface soil	-10.7003	-76.3149	4214	2582.574	38.780	76.012	98.089	0.758	108.983
E36	surface soil	-10.6832	-76.3209	4202	2358.322	27.920	381.187	143.234	11.380	4212.127
E37	surface soil	-10.6832	-76.3209	4202	7434.914	969.759	236.864	492.545	42.491	1347.440
E38	surface soil	-10.6057	-76.3313	4355	5222.086	53.169	16.710	49.158	0.093	415.495
E39	surface soil	-10.6111	-76.3275	4356	4536.842	108.219	27.517	46.932	0.220	33.088
E4	surface soil	-10.7076	-76.1896	4091	3787.582	52.525	14.867	36.289	0.275	92.968
E40	surface soil	-10.6518	-76.2996	4308	3230.104	113.299	39.265	52.153	0.606	528.987
E41	surface soil	-10.6584	-76.2879	4342	10202.657	127.453	56.676	38.641	0.686	263.709
E42	surface soil	-10.6647	-76.2835	4351	9349.370	48.657	64.676	58.678	0.465	3043.926
E43	surface soil	-10.6686	-76.2766	4392	6409.591	68.915	73.301	65.651	1.046	332.367
E44	surface soil	-10.6519	-76.2617	4290	3648.401	418.334	40.489	55.385	2.111	264.408
E45	surface soil	-10.6457	-76.2641	4177	5192.890	137.219	89.186	92.475	1.491	380.525
E46	surface soil	-10.6402	-76.2651	4132	4977.607	255.894	51.726	38.288	0.867	7635.368
E47	surface soil	-10.6335	-76.2639	4093	3840.027	204.509	11.268	17.027	0.166	215.902
E48	surface soil	-10.6232	-76.2683	4036	839.787	19.649	3.654	0.518	0.044	17.528
E49	surface soil	-10.7176	-76.2592	4353	814.815	38.851	375.982	844.608	0.154	1053.973
E5	surface soil	-10.6754	-76.1853	3939	1777.844	276.126	76.516	35.601	1.993	4486.968
E50	surface soil	-10.6973	-76.2327	4348	3303.472	350.884	90.518	44.084	0.924	421.204
E51	surface soil	-10.6948	-76.2225	4275	4830.280	164.309	34.979	41.174	0.389	202.145
E52	surface soil	-10.7030	-76.1900	4034	5567.654	48.924	6.134	1.523	0.057	22.080
E53	surface soil	-10.6780	-76.1842	3967	1718.344	26.425	7.304	10.933	0.210	53.480
E54	surface soil	-10.6506	-76.1673	3787	3374.206	42.149	7.805	1.892	0.111	82.715
E55	surface soil	-10.6483	-76.1556	3785	9633.604	24.444	8.503	2.507	0.035	117.858
E56	surface soil	-10.6310	-76.1762	3740	5389.359	57.112	10.686	4.936	0.323	61.652
E57	surface soil	-10.5776	-76.1884	3567	10404.858	2219.487	145.872	77.938	2.343	7155.347
E6	surface soil	-10.6522	-76.1673	3847	6092.646	57.856	21.555	4.023	0.402	108.638
E7	surface soil	-10.6501	-76.1565	3782	5924.767	35.542	7.569	6.464	0.071	52.485
E8	surface soil	-10.6325	-76.1749	3703	5510.575	118.515	16.916	9.889	0.453	124.172

Table SI-1
Metal Concentrations in Surface Soil Samples from the Junín Basin

sample ID	*material*	*latitude (°)*	*longitude (°)*	*altitude (masl)*	*Al (mg/kg)*	*Zn (mg/kg)*	*Cu (mg/kg)*	*As (mg/kg)*	*Ag (mg/kg)*	*Pb (mg/kg)*
E9	surface soil	-10.5825	-76.1857	3699	2096.239	618.233	50.295	41.559	1.984	266.403
F1	surface soil	-10.8013	-76.2402	4145	5027.384	50.659	37.796	29.299	1.776	283.458
F10	surface soil	-10.7800	-76.2836	4252	2662.648	3298.697	560.977	862.857	12.113	1429.225
F11	surface soil	-10.7388	-76.2557	4347	5352.849	194.094	233.208	141.025	1.439	421.634
F12	surface soil	-10.7372	-76.2533	4383	5125.073	78.746	156.706	124.317	1.025	314.150
F13	surface soil	-10.7350	-76.2578	4335	7857.194	55.795	130.246	43.042	0.774	462.310
F14	surface soil	-10.7372	-76.2588	4321	4506.782	60.080	290.277	449.090	1.857	323.762
F15	surface soil	-10.7690	-76.2469	4230	6085.439	29.312	74.683	62.104	0.538	217.326
F16	surface soil	-10.8164	-76.2425	4120	5678.536	683.968	57.320	20.529	0.673	225.289
F17	surface soil	-10.8042	-76.2361	4141	1191.997	385.483	776.208	218.780	30.106	17918.461
F18	surface soil	-10.8072	-76.2364	4136	2991.963	455.245	299.727	113.847	15.742	868.854
F19	surface soil	-10.8163	-76.2362	4126	7857.194	130.246	55.795	43.042	0.774	462.310
F2	surface soil	-10.8039	-76.2419	4140	5353.715	98.564	68.384	62.631	0.502	149.706
F20	surface soil	-10.8186	-76.2377	4119	8718.717	117.382	56.812	62.720	0.473	327.124
F21	surface soil	-10.7707	-76.2537	4210	4626.563	34.954	48.736	27.699	0.258	85.371
F22	surface soil	-10.7679	-76.2559	4220	4821.516	63.736	89.395	90.485	0.464	118.397
F23	surface soil	-10.7465	-76.2587	4303	3315.103	184.668	166.148	121.669	2.876	473.461
F24	surface soil	-10.8471	-76.1610	4123	5464.740	134.732	31.666	19.399	0.260	100.116
F25	surface soil	-10.8403	-76.1731	4147	3737.633	147.907	39.524	34.875	0.376	188.304
F26	surface soil	-10.8325	-76.1876	4124	6119.818	188.741	38.893	23.032	0.424	244.242
F27	surface soil	-10.8210	-76.2004	4161	8224.782	69.721	69.523	51.292	0.657	321.683
F28	surface soil	-10.8013	-76.2304	4181	6885.527	119.331	123.631	90.855	0.992	269.317
F29	surface soil	-10.7783	-76.2852	4212	3004.705	309.391	937.101	299.420	3.913	533.256
F3	surface soil	-10.8129	-76.2423	4122	2404.056	438.094	121.739	42.819	1.172	536.756
F30	surface soil	-10.8251	-76.2853	4158	2577.201	546.085	576.799	715.004	4.088	1013.455
F31	surface soil	-10.8395	-76.2863	4157	4239.721	305.185	289.417	162.408	2.023	2690.271
F32	surface soil	-10.8031	-76.2771	4146	2648.041	81.226	351.335	275.012	5.615	151.542
F33	surface soil	-10.7430	-76.2634	4319	5447.814	83.288	123.561	131.879	0.514	189.790
F34	surface soil	-10.8152	-76.2067	4182	6812.310	44.909	52.157	84.047	0.363	205.639
F35	surface soil	-10.8119	-76.2153	4148	459.946	269.672	56.243	42.241	0.633	203.997
F36	surface soil	-10.8040	-76.2328	4139	2593.035	555.726	819.236	210.278	24.098	328.047
F37	surface soil	-10.8165	-76.2191	4131	6721.643	59.026	17.439	18.147	0.149	133.657
F38	surface soil	-10.8185	-76.2102	4123	5221.185	69.964	74.659	100.501	0.577	259.973
F39	surface soil	-10.8249	-76.2033	4136	9927.862	50.667	36.358	55.985	0.185	106.628
F4	surface soil	-10.7446	-76.2595	4322	4825.574	132.117	146.357	92.117	1.232	323.299
F40	surface soil	-10.8367	-76.1897	4111	3816.252	155.173	67.276	62.900	0.556	231.256
F41	surface soil	-10.8438	-76.1759	4139	5588.196	44.634	35.233	65.381	0.229	123.084
F42	surface soil	-10.8490	-76.1665	4121	4375.443	114.346	29.940	46.786	0.452	234.686
F43	surface soil	-10.8604	-76.1447	4103	6394.850	155.229	20.926	50.186	0.096	132.856
F44	surface soil	-10.8539	-76.1445	4133	6214.944	164.353	19.404	21.896	0.081	95.389
F45	surface soil	-10.8460	-76.1408	4144	6427.472	35.179	9.208	19.094	0.098	89.765
F46	surface soil	-10.8470	-76.1429	4154	6577.340	26.646	35.067	116.767	0.258	171.918
F48	surface soil	-10.8381	-76.1435	4189	5354.836	101.676	30.272	23.160	0.349	172.793
F49	surface soil	-10.8536	-76.1357	4118	6355.789	63.627	17.810	37.363	0.132	152.725
F5	surface soil	-10.7672	-76.2499	4230	5410.058	53.523	102.209	86.832	0.494	164.737
F50	surface soil	-10.8521	-76.1332	4127	1267.390	228.879	22.621	4.823	0.073	40.220
F52	surface soil	-10.8591	-76.1364	4110	2975.803	25.822	3.252	1.983	0.016	24.814
F53	surface soil	-10.8602	-76.1259	4147	9012.014	60.976	28.756	71.123	0.276	185.100
F54	surface soil	-10.8638	-76.1283	4118	5890.274	100.016	22.526	54.967	0.272	189.000
F55	surface soil	-10.8674	-76.1210	4129	5925.205	91.816	25.078	35.035	0.336	219.946
F56	surface soil	-10.8662	-76.1235	4127	5918.883	67.119	16.580	43.892	0.138	117.427
F57	surface soil	-10.8607	-76.1215	4168	10973.879	98.069	11.232	22.404	0.084	117.378
F58	surface soil	-10.8624	-76.1194	4148	8454.059	107.054	12.626	27.151	0.091	108.094
F6	surface soil	-10.7452	-76.2632	4294	3703.466	286.404	86.011	54.626	1.131	318.988
F7	surface soil	-10.8054	-76.2764	4146	6282.314	1121.346	475.327	120.676	7.343	362.817
F8	surface soil	-10.8384	-76.2884	4159	5044.575	318.558	376.596	89.200	0.836	837.212
F9	surface soil	-10.8257	-76.2821	4153	7811.979	125.499	274.120	57.663	0.777	331.244
G1	surface soil	-11.0348	-75.8940	4357	5407.046	13.128	15.702	6.549	0.190	106.935
G10	surface soil	-10.8740	-76.2970	4152	8390.644	494.217	142.324	160.672	1.607	498.906
G11	surface soil	-10.8686	-76.2871	4142	8110.163	146.199	280.998	201.421	2.219	3448.390
G12	surface soil	-10.8433	-76.2664	4123	2827.369	1584.006	623.739	155.886	23.640	947.868
G13	surface soil	-10.7266	-76.0605	4343	7084.672	7.531	59.408	21.620	0.053	91.976
G14	surface soil	-10.7655	-76.0741	4327	5091.017	13.394	192.814	6.314	0.070	52.722
G15	surface soil	-10.7781	-76.1109	4262	613.726	339.028	19.819	1.157	0.077	37.317
G16	surface soil	-10.8135	-76.1138	4230	7235.496	68.159	7.915	12.873	0.025	58.680
G18	surface soil	-10.9643	-75.9999	4233	5915.742	16.983	14.287	14.152	0.155	58.194
G19	surface soil	-10.9717	-76.0123	4201	5943.838	15.952	7.166	28.487	0.097	70.291
G2	surface soil	-11.0474	-75.8960	4357	5708.384	13.422	20.709	42.726	0.476	157.123
G20	surface soil	-10.9762	-76.0217	4179	8119.405	56.554	13.192	38.380	0.083	107.301
G21	surface soil	-10.9784	-76.0337	4138	5154.924	28.348	6.824	13.727	0.034	33.789
G22	surface soil	-11.1097	-75.9072	4417	7073.522	23.139	7.534	17.765	0.063	68.825
G23	surface soil	-10.9852	-76.0484	4107	3794.967	40.754	11.423	27.249	0.121	96.084
G24	surface soil	-10.6625	-76.2796	4382	7259.256	124.611	39.810	52.289	0.470	179.285
G25	surface soil	-10.6596	-76.2838	4365	8915.849	92.238	69.237	35.162	0.528	528.138
G26.1	surface soil	-10.6518	-76.2869	4302	11327.702	34.998	73.624	61.391	0.508	2583.837
G26.2	surface soil	-10.6518	-76.2869	4302	13679.446	39.740	44.968	26.399	0.274	132.053
G26.3	surface soil	-10.6518	-76.2869	4302	7980.867	13.344	4.336	0.902	0.017	13.896
G27.1	surface soil	-10.6518	-76.2869	4302	7413.449	59.129	28.293	14.442	0.286	93.871
G27.2	surface soil	-10.6518	-76.2869	4302	9966.274	49.977	72.464	70.722	0.652	224.480
G27.3	surface soil	-10.6518	-76.2869	4302	10726.202	32.986	87.157	64.894	0.704	3079.937
G28.1	surface soil	-10.6502	-76.2935	4321	7158.675	126.480	57.563	65.791	0.490	224.766
G28.2	surface soil	-10.6502	-76.2935	4321	6867.358	94.521	54.167	66.829	0.455	309.235
G28.3	surface soil	-10.6502	-76.2935	4321	5173.923	48.541	10.104	3.679	0.067	32.653
G29	surface soil	-10.6487	-76.3009	4302	7098.243	40.077	10.101	6.035	0.078	42.335
G3	surface soil	-11.0786	-75.9530	4238	4989.571	35.394	6.241	9.140	0.050	170.679
G30.1	surface soil	-10.6265	-76.3167	4342	3469.951	85.716	12.467	6.411	0.184	100.624
G30.2	surface soil	-10.6265	-76.3167	4342	3283.507	23.894	3.101	3.255	0.115	25.046
G30.3	surface soil	-10.6265	-76.3167	4342	3394.898	42.131	6.749	6.333	0.049	35.471
G31.1	surface soil	-11.6208	-75.6286	4151	8065.715	29.829	7.566	8.611	0.056	40.497
G31.2	surface soil	-11.6208	-75.6286	4151	7511.837	41.491	14.134	11.720	0.144	129.453
G31.3	surface soil	-11.6208	-75.6286	4151	8864.741	39.204	9.267	11.193	0.098	52.451
G4	surface soil	-11.0788	-75.9533	4293	2413.362	15.457	3.148	1.825	0.009	14.361
G5	surface soil	-11.1651	-76.0178	4112	7235.302	84.968	19.954	7.530	0.037	51.390
G6	surface soil	-11.0865	-76.1429	4113	10253.989	84.079	20.726	27.036	0.184	108.127
G7	surface soil	-11.0572	-76.1577	4114	6163.316	72.166	8.385	18.651	0.050	63.999
G8	surface soil	-11.1574	-76.0462	4111	605.679	61.424	12.714	16.244	0.093	90.064
G9	surface soil	-11.0842	-75.9971	4117	3977.679	132.482	7.887	4.669	0.115	45.747
H1	surface soil	-10.8642	-75.9871	4478	8004.806	273.957	8.604	15.118	0.162	148.418
H10	surface soil	-10.8277	-76.3718	4292	8319.521	129.206	38.765	90.768	0.182	186.133
H11	surface soil	-10.8342	-76.4012	4334	7574.932	147.751	27.697	91.310	0.202	161.951
H12	surface soil	-10.8321	-76.4396	4291	8654.587	101.190	40.947	56.528	0.120	123.709
H13	surface soil	-10.8065	-76.4382	4456	9963.859	125.877	36.312	69.382	0.175	183.499
H14	surface soil	-10.8001	-76.4279	4435	3840.986	198.556	29.720	10.479	0.206	198.874
H15	surface soil	-10.7899	-76.4014	4492	35455.104	66.699	14.283	8.643	0.079	32.564
H16	surface soil	-10.7682	-76.3703	4335	13493.667	120.482	112.966	199.465	0.783	622.761
H17	surface soil	-10.7525	-76.3420	4276	13643.527	101.354	111.718	132.355	0.559	201.388
H18	surface soil	-10.7395	-76.3239	4223	1922.528	33.909	13.968	18.881	1.686	118.126
H19	surface soil	-10.7615	-76.3129	4206	8516.613	203.436	247.743	164.398	2.931	719.688
H2	surface soil	-10.8262	-76.0165	4355	6442.680	31.360	6.051	15.844	0.063	83.049
H20	surface soil	-10.7907	-76.3059	4184	13169.322	440.045	260.236	87.657	3.339	1089.396
H21	surface soil	-10.7983	-76.3035	4184	4730.311	1261.639	194.852	68.820	4.849	2348.743
H22	surface soil	-10.7687	-76.2687	4269	7210.474	1476.765	2674.341	233.901	4.601	2214.905
H23	surface soil	-10.9187	-76.3294	4175	10276.893	54.899	25.956	66.347	0.211	113.772
H24	surface soil	-10.9119	-76.3419	4203	10747.184	34.729	29.380	66.532	0.235	142.815
H25	surface soil	-10.9178	-76.3545	4243	9278.591	77.553	70.762	181.337	0.359	360.961
H26	surface soil	-10.9277	-76.3920	4431	6002.114	208.417	22.903	67.326	0.250	191.187
H3	surface soil	-10.8316	-76.0320	4325	3011.995	127.076	21.986	19.059	0.136	122.620
H4	surface soil	-10.8182	-76.2809	4147	6051.389	2200.248	322.581	107.556	5.301	2951.923
H5	surface soil	-10.8054	-76.2776	4151	4612.349	1829.869	502.892	157.731	11.024	1990.127
H6	surface soil	-10.8083	-76.2865	4155	11779.283	338.805	221.250	55.233	1.713	633.136
H7	surface soil	-10.8117	-76.3020	4171	10699.736	150.316	323.846	419.733	1.804	748.278
H8	surface soil	-10.8171	-76.3231	4220	7914.690	77.698	118.004	82.821	0.416	331.506
H9	surface soil	-10.8288	-76.3410	4262	7169.933	118.708	76.157	39.057	0.230	224.057

Table SI-2.
Metal Concentrations in Soil Profile (Fig. 2) at Site 2 (Fig. 3)

Sample ID	Depth (cm)	Al (mg/kg)	Zn (mg/kg)	Cu (mg/kg)	As (mg/kg)	Ag (mg/kg)	Pb (mg/kg)
SP1-1	0	8545.087	47.766	72.271	70.798	0.819	181.292
SP1-2	1	12381.838	86.310	33.381	81.417	0.540	181.268
SP1-3	2	12650.609	89.014	30.021	72.549	0.513	181.033
SP1-4	4	11893.875	56.630	22.448	15.722	0.204	104.585
SP1-5	6	13057.251	9.794	20.936	1.611	0.037	29.146
SP1-6	8	13641.646	6.756	20.141	1.146	0.019	23.098
SP1-7	10	14376.657	7.097	21.775	1.531	0.023	25.063
SP1-8	14	22648.602	8.315	32.095	2.093	0.025	38.350
SP1-9	18	14249.304	5.164	19.915	1.761	0.018	23.022
SP1-10	22	13803.333	4.348	19.151	2.006	0.025	22.047
SP1-11	30	14532.698	4.446	19.018	2.957	0.021	23.463
SP1-12	35	12260.225	17.509	3.527	4.665	0.020	23.890

Table SI-3.
Metal Concentrations in Plant Roots and Shoots, and Adjacent Soil

Soil Sample Site	latitude (°)	longitude (°)	distance from mining district (km)	azimuth bearing from mining district (°)	lab code	material	factor	Al (mg/kg)	Cu (mg/kg)	Zn (mg/kg)	As (mg/kg)	Ag (mg/kg)	Pb (mg/kg)
H6	-10.8083	-76.2865	14.7	190.9									
					H6R	roots		4886.860	87.909	99.548	17.933	0.697	81.235
					H6C	shoots		352.080	21.542	32.332	3.049	0.437	15.390
					H6	soil		11779.283	221.250	338.805	55.233	1.713	633.136
							translocation factor	*7%*	*25%*	*32%*	*17%*	*63%*	*19%*
							accumulation factor	*22%*	*25%*	*19%*	*19%*	*33%*	*8%*
G20	-10.9762	-76.0217	42.2	141.8									
					G20R	roots		998.745	7.532	53.272	3.272	1.179	12.419
					G20C	shoots		460.466	3.852	26.599	1.198	0.068	4.685
					G20	soil		8119.405	13.192	56.554	38.380	0.083	107.301
							translocation factor	*46%*	*51%*	*50%*	*37%*	*6%*	*38%*
							accumulation factor	*9%*	*43%*	*71%*	*6%*	*750%*	*8%*
H4	-10.8182	-76.2809	15.7	187.8									
					H4R	roots		1080.491	53.220	666.773	11.443	1.938	230.169
					H4C	shoots		220.739	14.527	114.166	3.639	0.469	26.335
					H4	soil		6051.389	322.581	2200.248	107.556	5.301	2951.923
							translocation factor	*20%*	*27%*	*17%*	*32%*	*24%*	*11%*
							accumulation factor	*11%*	*11%*	*18%*	*7%*	*23%*	*4%*
H5	-10.8054	-76.2776	14.3	187.2									
					H5R	roots		610.061	139.950	603.379	17.745	1.891	189.553
					H5C	shoots		156.410	30.119	114.977	4.962	0.223	38.757
					H5	soil		4612.349	502.892	1829.869	157.731	11.024	1990.127
							translocation factor	*26%*	*22%*	*19%*	*28%*	*12%*	*20%*
							accumulation factor	*8%*	*17%*	*20%*	*7%*	*10%*	*6%*
B21	-11.1442	-76.0650	57.9	153.3									
					B21R	roots		9.806	11.068	27.210	0.501	17.157	1.815
					B21C	shoots		61.874	6.623	34.965	0.174	0.575	0.668
					B21	soil		788.770	15.838	50.895	2.728	0.247	151.769
							translocation factor	*631%*	*60%*	*128%*	*35%*	*3%*	*37%*
							accumulation factor	*5%*	*56%*	*61%*	*12%*	*3593%*	*1%*
B27	-11.1257	-76.1002	52.6	160.6									
					B27R	roots		2115.799	9.594	65.681	4.869	0.146	15.146
					B27C	shoots		346.357	3.423	18.126	0.909	0.054	1.624
					B27	soil		7023.413	8.154	66.623	24.514	0.084	71.412
							translocation factor	*16%*	*36%*	*28%*	*19%*	*37%*	*11%*
							accumulation factor	*18%*	*80%*	*63%*	*12%*	*120%*	*12%*
G21	-10.9784	-76.0337	41.6	143.4									
					G21R	roots		5455.532	17.430	47.971	13.527	0.916	18.526
					G21C	shoots		580.312	5.673	19.578	1.098	0.034	1.823
					G21	soil		5154.924	6.824	28.348	13.727	0.034	33.789
							translocation factor	*11%*	*33%*	*41%*	*8%*	*4%*	*10%*
							accumulation factor	*59%*	*169%*	*119%*	*53%*	*1388%*	*30%*
H22	-10.7687	-76.2687	10.1	182.0									
					H22R	roots		598.267	811.740	205.012	31.018	0.796	171.657
					H22C	shoots		359.598	490.727	267.503	19.694	0.307	114.060
					H22	soil		7210.474	2674.341	1476.765	233.901	4.601	2214.905
							translocation factor	*60%*	*60%*	*130%*	*63%*	*39%*	*66%*
							accumulation factor	*7%*	*24%*	*16%*	*11%*	*12%*	*6%*
G12	-10.8433	-76.2664	18.3	181.8									
					G12R	roots		1377.414	282.397	722.810	94.482	17.206	599.845
					G12C	shoots		332.305	67.459	277.916	22.501	7.466	149.528
					G12	soil		2827.369	623.739	1584.006	155.886	23.640	947.868
							translocation factor	*24%*	*24%*	*38%*	*24%*	*43%*	*25%*
							accumulation factor	*30%*	*28%*	*32%*	*38%*	*52%*	*40%*

Table SI4:
*U.S. EPA maximum contamination level for industrial waste and measured percentiles(P), background concentration, and enrichment factors on the Junín Plain^*

	Pb	As	Cu	Zn	Ag
EPA maximum contamination level	420	75	4300	7500	N/A
median observed	133	28.3	23.6	85.7	0.235
max observed	21299	863	2674	17651	42.5
P90	3081	138	190	363	1.97
P80	758	82.9	86.5	194	0.831
P70	323	57.2	56.2	137	0.489
P60	200	38.3	36.6	114	0.359
P50	133	28.3	23.6	85.7	0.235
P40	107	20.7	17.2	67.1	0.154
P30	84.5	15.9	12.7	53.2	0.112
P20	57.5	11.0	8.88	41.3	0.070
P10	34.9	6.30	6.66	28.4	0.042
background: SP1-9*	23.0	1.76	19.9	5.16	0.020
enrichment factors: P90/SP1-9*	133.8	78.1	9.52	70.2	107

^ all values are in mg/kg except for enrichment factors, which are dimensionless.
* background and resultant enrichment factor based on soil sample obtained 18 cm below the surface (Figure 2) at a site 4 km NNW of Cerro de Pasco (Figures 1 and 3).