

## Supplementary materials

Table S1 – List of samples, collection date, temperature and mineralogical associations as resulting by XRD analyses and detailed by FTIR study. The sampling includes water spring sampled at Stufe di Nerone. In the temperature column: tc, thermo couple (see chapter 2.2 Sampling and analytical techniques), infr, infrared gun. In the mineralogy column: ?, for minerals to be further investigated; minerals in red are approximate attribution based on XRD patterns. The orange cells evidence water samples.

Sample name	Sampled area	Location*	Details on sites and sample	Temperature (°C) tc, infr	Sampling date	Mineralogy	pH	Note
Ss1	Pisciarelli	L1	-	-	09-Jan-13	Sulfur	nd	Piochi et al 2015
S <sub>tot</sub> 2	Pisciarelli	L1	-	-	09-Jan-13	Pickeringite, Alunite, Alunogen, Alum-(K), Sulfur, Amarillite, Mereiterite	nd	Piochi et al 2015
S3	Pisciarelli	L1	-	-	09-Jan-13	Alunite, Alum-(K)	nd	Piochi et al 2015
S <sub>tot</sub> 4	Pisciarelli	L1	-	-	09-Jan-13	Alunogen, Alunite, Sulfur, Kaolinite	nd	Piochi et al 2015
S5	Pisciarelli	L2	-	-	09-Jan-13	Quartz, Amorphous	nd	Piochi et al 2015
S7	Pisciarelli	L2	-	-	09-Jan-13	Alunite, Alunogen, Illite/Montmorillonite	nd	Piochi et al 2015
S10	Pisciarelli	L2	-	-	21-Mar-13	Alunite, Illite/Montmorillonite	nd	Piochi et al 2015
Sf12	Pisciarelli	L3 - mud pool	mud	-	21-Mar-13	Alunite, Sulfur, K-Feldspar, Amorphous, Illite	nd	Piochi et al 2015
Sf14	Pisciarelli	L3 - mud pool	mud	-	10-Oct-13	Alunite Sulfur, K-Feldspar, Amorphous, Illite	nd	Piochi et al 2015
S <sub>tot</sub> 16	Pisciarelli	L4	-	-	21-Mar-13	Quartz, Amorphous, Illite/Montmorillonite, Kaolinite	nd	Piochi et al 2015
ASA 12-3	Solfatara	ASA	NE-slope, uppermost part	-	11-Dec-13	Alunite, Alunogen	nd	Piochi et al 2015
AP 12-3	Pisciarelli	L1	-	-	11-Dec-13	Alunite, Alunogen, Alum-(K)	nd	Piochi et al 2015
MP^	Pisciarelli	L3 - mud pool	mud	-	11-Dec-13	Alunite, Sulfur K-Feldspar, Amorphous, Illite	nd	Piochi et al 2015

<b>MS</b>	Solfatara	pool	mud	-	11-Dec-13	Alunite, Sulfur K-Feldspar, Amorphous, Illite	nd	Piochi et al 2015
<b>Red_1_1/15</b>	Pisciarelli	L50	reddish deposits	-	29-Jan-15	Alunite, Hematite	nd	Piochi et al 2015
<b>Sg12</b>	Pisciarelli	L3 - mud pool	separated from the mud	-	17-Apr-13	Gypsum	nd	Piochi et al 2015
<b>Lava</b>	Solfatara	L5	NW area from Stuff, dome	-	24-Jun-14	Alunite, Analcime, Quartz	nd	Piochi et al 2015
<b>Tephra</b>	Solfatara	L5	NW area from Stuff	-	24-Jun-14	Analcime, Quartz, Gypsum, Illite	nd	Piochi et al 2015
<b>S8</b>	Pisciarelli	L2	-	-	09-Jan-13	Alunite	nd	Piochi et al 2015
<b>S9</b>	Pisciarelli	L2	-	-	11-Mar-13	Sulfur	nd	Piochi et al 2015
<b>Ss15</b>	Pisciarelli	L4	-	-	21-Mar-13	Sulfur	nd	Piochi et al 2015
<b>Sp13</b>	Pisciarelli	L3 - mud pool	separated from the mud	-	17-Apr-13	Pyrite	nd	Piochi et al 2015
<b>ASA 24-9</b>	Solfatara	ASA	NE-slope, uppermost part	-	24-Sep-14	Alunite	nd	Piochi et al 2015
<b>AP 24-9_2b</b>	Pisciarelli	L1	-	-	24-Sep-14	Alunite	nd	Piochi et al 2015
<b>AP 24-9_2a</b>	Pisciarelli	L1	-	-	24-Sep-14	Alunite	nd	Piochi et al 2015
<b>AP 24-9</b>	Pisciarelli	L1	-	-	24-Sep-14	Alunite	nd	Piochi et al 2015
<b>ASA 12-3</b>	Solfatara	ASA	NE-slope, uppermost height	-	11-Dec-13	Alunite	nd	Piochi et al 2015
<b>AP 12-3</b>	Pisciarelli	L1	-	-	09-Jan-13	Alunite	nd	Piochi et al 2015
<b>Sample 2 alunite</b>	Pisciarelli	L1	-	-	09-Jan-13	Alunite	nd	Piochi et al 2015
<b>SSA 24-9 S</b>	Solfatara	ASA	NE-slope, uppermost height	-	24-Sep-14	Sulfur	nd	Piochi et al 2015
<b>SS 24-9 bg S</b>	Solfatara	Bocca Grande	-	-	24-Sep-14	Sulfur	nd	Piochi et al 2015
<b>SS 24-9b S</b>	Solfatara	ASA	NE-slope, lowermost height	-	24-Sep-14	Sulfur	nd	Piochi et al 2015
<b>SS 24-9i S</b>	Solfatara	ASA	NE-slope, intermediate height	-	24-Sep-14	Sulfur	nd	Piochi et al 2015

<b>SP 24-9 S</b>	Pisciarelli	L1	-	-	24-Sep-14	Sulfur	nd	Piochi et al 2015
<b>SP 12-3</b>	Pisciarelli	L1 vent	-	-	11-Dec-13	Sulfur	nd	Piochi et al 2015
<b>SS 12-3 b</b>	Solfatara	ASA	NE-slope, lowermost height	-	11-Dec-13	Sulfur	nd	Piochi et al 2015
<b>SS 12-3 i</b>	Solfatara	ASA	NE-slope, intermediate height	-	11-Dec-13	Sulfur	nd	Piochi et al 2015
<b>SSA 12-3</b>	Solfatara	ASA	NE-slope, uppermost height	-	11-Dec-13	Sulfur	nd	Piochi et al 2015
<b>SS 12-13 BG</b>	Solfatara	Bocca Grande	-	-	11-Dec-13	Sulfur	nd	Piochi et al 2015
<b>Sample 6 Sulfur</b>	Pisciarelli	L1	-	-	09-Jan-13	Sulfur	nd	Piochi et al 2015
<b>Sample 11 Sulfur</b>	Pisciarelli	L4	-	-	09-Jan-13	Sulfur	nd	Piochi et al 2015
<b>Sample 4 Sulfur</b>	Pisciarelli	L1	-	-	09-Jan-13	Sulfur	nd	Piochi et al 2015
<b>Sample 2 Sulfur</b>	Pisciarelli	L1	-	-	09-Jan-13	Sulfur	nd	Piochi et al 2015
<b>MS 24-9 Ag<sub>2</sub>S - elemental S</b>	Solfatara	Mud pool	separated from mud	-	24-Sep-14	Sulfur in the mud	nd	Piochi et al 2015
<b>MP 24-9 Ag<sub>2</sub>S - elemental S</b>	Pisciarelli	Mud pool	separated from mud	-	24-Sep-14	Sulfur in the mud	nd	Piochi et al 2015
<b>Geiser Mud - elemental S</b>	Pisciarelli	Opened Geiser	-	-	11-Dec-13	Sulfur in the mud	nd	Piochi et al 2015
<b>Solfatara - elemental S</b>	Solfatara	Mud pool	separated from mud	-	09-Feb-13	Sulfur in the mud	nd	Piochi et al 2015
<b>MP 12-3 - elemental S</b>	Pisciarelli	Mud pool	separated from mud	-	11-Dec-13	Sulfur in the mud	nd	Piochi et al 2015
<b>MS 12-3 - elemental S</b>	Solfatara	Mud pool	separated from mud	-	11-Dec-13	Sulfur in the mud	nd	Piochi et al 2015
<b>Geiser Mud CRS+AVS</b>	Pisciarelli	Opened Geiser	-	-	01-Mar-14	Bulk mud	nd	Piochi et al 2015
<b>Solfatara CRS+AVS</b>	Solfatara	Mud pool	-	-	01-May-13	Bulk mud	nd	Piochi et al 2015
<b>MP 12-3 CRS+AVS</b>	Pisciarelli	L3 - mud pool	mud	-	11-Dec-13	Bulk mud	nd	Piochi et al 2015
<b>MS 12-3 CRS+AVS</b>	Solfatara	Mud pool	-	-	11-Dec-13	Bulk mud	nd	Piochi et al 2015

<b>L1c S/11-15</b>	Pisciarelli	L1 vent	cream-like	90.1	09-Nov-15	-	nd	-
<b>L1a S/11-15</b>	Pisciarelli	L1 wall	minute Sulfur crystals	-	09-Nov-15	-	nd	-
<b>L1d wr/11-15</b>	Pisciarelli	L1 wall	whole-rock	-	09-Nov-15	Alunogen	nd	-
<b>L1d1 al/11-15</b>	Pisciarelli	L1 wall	hot soft white efflorescence (neve calda)	-	09-Nov-15	Alunogen, Meta-alunogen, Amorphous	nd	-
<b>L1d2 white/11-15</b>	Pisciarelli	L1 wall	white	-	09-Nov-15	Ammonium sulfate, Alunogen, Amorphous	nd	-
<b>MP/11-15</b>	Pisciarelli	Mud pool	black mud	-	09-Nov-15	Pyrite, Mica/Clay, Alunite, K-feldspar, Sulfur, Amorphous	nd	-
<b>P PP/11-15</b>	Pisciarelli	Opened Geiser	argilla	52	09-Nov-15	nd	nd	-
<b>P PP1/11-15</b>	Pisciarelli	Opened Geiser	argilla	92°C	09-Nov-15	Pyrite, Clay, Alum-(K), Sulfur, Amorphous	nd	-
<b>P PPv/11-15</b>	Pisciarelli	L19 Geiser-pool wall	green	34.2	09-Nov-15	Sulfur, Ammonium sulfate, Alunite, Montmorillonite	nd	-
<b>P PPb/11-15</b>	Pisciarelli	L19 Geiser-pool wall	beige	50.2	09-Nov-15	Illite/Montmorillonite, Alunite	nd	-
<b>P Pv/11-15</b>	Pisciarelli	L20 new vents	argilla	60.5	09-Nov-15	Sulfur, Ammonium sulfate, Alunite, Montmorillonite	nd	-
<b>P L50 yellow</b>	Pisciarelli	L50 - high NW slope	yellow ashy-to-sandy deposits	-	09-Nov-15	Jarosite, Chabazite?, Alunite, Amorphous	nd	-
<b>P L50 white</b>	Pisciarelli	L50 - high NW slope	white ashy-to-sandy deposits	-	09-Nov-15	Alunite, Clay?, Amorphous	nd	-
<b>P L50 red</b>	Pisciarelli	L50 - high NW slope	reddish ashy-to-sandy deposits	-	09-Nov-15	Fe-oxide, Jarosite, Alunite, Amorphous	nd	-
<b>SP/11-15</b>	Solfatara	Mud pool	mud	76.7	09-Nov-15	-	nd	-
<b>BG wr/11-15</b>	Solfatara	Bocca Grande	yellow and black portion at fumarole	93.1	09-Nov-15	Pyrite, high Amorphous content	nd	-
<b>BG pg/11-15</b>	Solfatara	Bocca Grande	yellow portion at fumarole above	-	09-Nov-15	Sulfur	nd	-

<b>SStg/11-15</b>	Solfatara	SSt- Stuff	light yellow S	63.5-93	09-Nov-15	Sulfur	nd	-
<b>SStb/11-15</b>	Solfatara	SSt- Stuff	whitish	63.5-93	09-Nov-15	Alunite, Alunogen, <b>As-Fe bearing phases</b> , Amorphous	nd	-
<b>SStgf/11-15</b>	Solfatara	SSt- Stuff	yellow S crystals	63.5-93	09-Nov-15	Sulfur	nd	-
<b>SStgc/11-15</b>	Solfatara	SSt- Stuff	columnar S	-	09-Nov-15	Sulfur	nd	-
<b>L1v PSc/6-16</b>	Pisciarelli	L1vent	crystalline	>87	14-Jun-16	Sulfur	nd	-
<b>L1v PGw/6-16</b>	Pisciarelli	L1 vent	gray lenses	>87	14-Jun-16	Halloysite?, Fe-Mg-Ti oxide, Amorphous	nd	-
<b>L1v PSg/6-16</b>	Pisciarelli	L1 vent	S liquid?	>87	14-Jun-16	very strange pattern	nd	-
<b>L1v Pwc/6-16</b>	Pisciarelli	L1 vent	cream-like	>87	14-Jun-16	Sulfur, <b>Sb-sulfide</b> , Fe-oxide	nd	-
<b>L1 Pv/6-16</b>	Pisciarelli	L1 wall	vitreous	56.9	14-Jun-16	Clay, Alunite, Quartz, Amorphous	nd	-
<b>L1 PvSc/6-16</b>	Pisciarelli	L1 wall	vitreous	56.9	14-Jun-16	Sulfur	nd	-
<b>L1 Pwh/6-16</b>	Pisciarelli	L1 wall	-	56.9	14-Jun-16	-	nd	-
<b>L1 Psalt/6-16</b>	Pisciarelli	L1 wall	saline crust	67	14-Jun-16	Alum-(K), Alunogen	nd	-
<b>L1Pblack/6-16</b>	Pisciarelli	L1 wall	blackish, at a fracture on wall	67	14-Jun-16	<b>Sulfur plu beta sulfur</b> (shifted pattern), Amorphous	nd	-
<b>MP/6-16</b>	Pisciarelli	L3 - mud pool	mud	>70	14-Jun-16	Alunite, Sulfur, K-feldspar, Clay, Amorphous	nd	-
<b>Geiser mud</b>	Pisciarelli	Opened Geiser	argilla	>90	14-Jun-16	Halotrichite?, Sulfur, Alunite, Illite/montmorillonite, Amorphous	nd	-
<b>GnvW bl/6-16</b>	Pisciarelli	L19 Geiser-pool wall	black argilla	74.7	14-Jun-16	Alunite, Sb-sulfur, Amorphous	nd	-
<b>GnvW be/6-16</b>	Pisciarelli	L19 Geiser-pool wall	plastered beige argilla	74.7	14-Jun-16	Mascagnite, Alunite, <b>Arseniate or Phosphate</b> , Amorphous	nd	-
<b>P L20 v1/6-16</b>	Pisciarelli	L20 new vent1	gray argilla	90	14-Jun-16	Ammonium sulfate, Alunite,	nd	-

						Illite/montmorillonite, Amorphous		
<b>P L20 v2 S/6-16</b>	Pisciarelli	L20 new vent2	Sulfur	44	14-Jun-16	Sulfur (B sulfur)	nd	-
<b>P L50 white/6-16</b>	Pisciarelli	L50 - high NW slope	white ashy-to- sandy deposits	-	14-Jun-16	Alunite, Alum-(Na), Minamite?, Amorphous	nd	-
<b>P L50 yellow/6-16</b>	Pisciarelli	L50 - high NW slope	yellow ashy-to- sandy deposits	-	14-Jun-16	Alunite, Coquimbite?, Amorphous	nd	-
<b>P L50 black/6-16</b>	Pisciarelli	L50 - high NW slope	black ashy-to- sandy deposits	-	14-Jun-16	Jarosite, Alunite, Gypsum, Amorphous	nd	-
<b>P L20 Nnv/6-16</b>	Pisciarelli	L20 - wall N of new vents	-	94	14-Jun-16	-	nd	-
<b>PS/6-16</b>	Solfatara	Mud pool	mud	52.9	14-Jun-16	Sulfur, Alunite, Anorthoclase, Amorphous	nd	-
<b>BG S/6-16</b>	Solfatara	Bocca Grande	S cream-like	93.2	14-Jun-16	Sulfur	nd	-
<b>up BG S/6-16</b>	Solfatara	BG-nearby area	crystalline sulfur	93.2	14-Jun-16	Sulfur	nd	-
<b>buco a/6-16</b>	Solfatara	BUCO	orange portion into the hole	-	14-Jun-16	Sulfur(new type-cif), Ammonium Hydrogen Arsenate	nd	-
<b>SMO ASA/6-16</b>	Solfatara	SMO	white, Monte Olibano	87	14-Jun-16	Sulfur, Alunite, Amorphous	nd	-
<b>SMO S/6-16</b>	Solfatara	SMO	fine yellow, Monte Olibano	87	14-Jun-16	Sulfur	nd	-
<b>ASA m/16-6</b>	Solfatara	ASA	white on the NE- slope, intermediate height	-	14-Jun-16	Sulfur, Pyrite, Amorphous	nd	-
<b>ASA h/16-6</b>	Solfatara	ASA	white on the NE- slope, uppermost height	-	14-Jun-16	Sulfur, Alunite, <b>Cu- mineral?</b> , Amorphous	nd	-
<b>SS/16-6</b>	Solfatara	SSt - NE-low	sulfur	-	14-Jun-16	Sulfur	nd	-
<b>SSt Sf/16-6</b>	Solfatara	SSt- Stuff	Sulfur in fracture	92	14-Jun-16	Sulfur	nd	-
<b>SSt Sp/16-6</b>	Solfatara	SSt- Stuff	Sulfur as fluff	92	14-Jun-16	Sulfur	nd	-

<b>SSt w/16-6</b>	Solfatara	SSt- Stuff	white	45	14-Jun-16	Alunogen, Clay	nd	-
<b>SSt sub/16-6</b>	Solfatara	SSt- Stuff	substratum of sulfur	92	14-Jun-16	Periclase(MgO), Alunite, Quartz, Amorphous	nd	-
<b>SSt win/16-6</b>	Solfatara	SSt- Stuff	efflorescence within Stuff	-	14-Jun-16	Rostite Al (SO4) (OH) ·5H2O, Sb-sulfide, Quartz, Amorphous	nd	-
<b>Ps 7-16*</b>	Pisciarelli	L3 - mud pool	mud	-	28-Jul-16	Sulfates plus Sulfur, clay, Amorphous	nd	-
<b>PL 20V1 7-16*</b>	Pisciarelli	L20	gray argilla	-	28-Jul-16	SO4 (mascagnite), few clay, Amorphous	nd	-
<b>L3-2</b>	Pisciarelli	L3 - vent neaby mud pool	efflorescence	-	20-Sep-16	Alunite, Sulfur K-Feldspar, Amorphous, Pyrite, Coquimbite	nd	-
<b>L1-7</b>	Pisciarelli	L1 vent	efflorescence	-	20-Sep-16	Alunite, Sulfur, Pyrite, Quartz, Amorphous	nd	-
<b>L1-6</b>	Pisciarelli	L1 vent	efflorescence	>95	20-Sep-16	Sulfur, Quartz, Amorphous	nd	-
<b>S BG</b>	Solfatara	Bocca Grande	Yellowish sulfur impregnating widely covers the greenish efflorescence	-	20-Sep-16	Sulfur, Quartz, Amorphous	nd	-
<b>L3-2</b>	Pisciarelli	L3 - vent neaby mud pool	Gray portion	84.4	20-Sep-16	Alunite, Sulfur, K-Feldspar, Amorphous	nd	-
<b>Smudbag</b>	Solfatara	Mud pool	Beidge mud	-	20-Sep-16	Alunite, Sulfur, K-Feldspar, Amorphous	nd	-
<b>Smudtube</b>	Solfatara	Mud pool	Beidge mud	50.4	20-Sep-16	Alunite, Sulfur, K-Feldspar, Amorphous	nd	-
<b>Smud box</b>	Solfatara	Mud pool	Beidge mud	35-43	20-Sep-16	Alunite, Sulfur, K-Feldspar, Amorphous	nd	-
<b>MP 09/16</b>	Pisciarelli	L3 - Mud pool	Beidge mud	-	20-Sep-16	Alunite, Sulfur, K-Feldspar, Pyrite, Amorphous	nd	-

<b>L1-3 greenish</b>	Pisciarelli	L1 vent	greenish efflorescence	29.8	20-Sep-16	-	nd	-
<b>MP/2-17</b>	Pisciarelli	L3 - Mud pool	gray mud	-	03-Feb-17	Alunite, Sulfur, K-Feldspar, Pyrite, Amorphous	nd	-
<b>L1-SP2-17</b>	Pisciarelli	L1 vent	sulfur cream, very hot	-	03-Feb-17	Sulfur	nd	-
<b>L1-AP2-17</b>	Pisciarelli	L1 vent	efflorescence	-	03-Feb-17	Alunite, Alunogen	nd	-
<b>L1-SP2-17 low</b>	Pisciarelli	L1 vent	sulfur acicular	-	03-Feb-17	Sulfur	nd	-
<b>L1-SP3-17</b>	Pisciarelli	L1 vent in fracture	Sulfur acicular efflorescence	-	03-Feb-17	Sulfur	nd	-
<b>MP/04-17</b>	Pisciarelli	L3 - Mud pool	gray mud	-	06-Apr-17	Alunite, Sulfur, K-Feldspar, Pyrite, Amorphous	nd	-
<b>MS/04-17</b>	Solfatara	Mud pool	Beidge mud	-	06-Apr-17	Alunite, Sulfur, K-Feldspar, Amorphous	nd	-
<b>MPS 517 new</b>	Solfatara	Mud pool	grey mud	-	31-May-17	Kaolinite?, Alunite, Sulfur, K-Feldspar, Amorphous (Mascagnite, Sulfur, mica in the surnatant)	nd	-
<b>Buco a/517</b>	Solfatara	BUCO	orange portion in the hole	-	31-May-17	Sulfur	nd	-
<b>L1-S517</b>	Pisciarelli	L1 vent near green portion	efflorescence	-	31-May-17	Sulfur	nd	-
<b>L1-S517 high</b>	Pisciarelli	L1 vent	sulfur cream, very hot	-	31-May-17	Sulfur	nd	-
<b>BG S/517</b>	Solfatara	Bocca Grande	sulfur	-	31-May-17	Sulfur	nd	-
<b>MS/517</b>	Solfatara	Mud pool	Beije mud	-	31-May-17	Sulfur, Alunite, Hydrobiotite, Amorphous	nd	-



<b>MP/2906-17</b>	Pisciarelli	L3 - Mud pool	gray mud	-	29-Jun-17	Alunite, Sulfur, K-Feldspar, Pyrite, Amorphous	nd	-
<b>MS/2906-17</b>	Solfatara	Mud pool	Beije mud	-	29-Jun-17	Sulfur, Alunite, Amorphous, Illite? bad XRD pattern	nd	-
<b>MS new/2906-17</b>	Solfatara	Mud pool	Beije mud	-	29-Jun-17	Sulfur, Alunite, Alum-(Na), Kaolinite?, Amorphous	nd	-
<b>L60 24/7/17</b>	Pisciarelli	L60	Sulfur at the level of the bubbling aquifer in a narrow hole	83.6	24-Jul-17	Sulfur	nd	-
<b>L3 24/7/17</b>	Pisciarelli	L3 - mud pool	mud, central mud pool	76.1	24-Jul-17	Sulfur, Gypsum, K-mascagnite	nd	-
<b>L1 main 24/7/17</b>	Pisciarelli	L1 vent	Blackish with sulfur	>92	24-Jul-17	Sulfur, Pyrite	nd	-
<b>L20 new vent 24/7/17</b>	Pisciarelli	L20 high area	high area south of pool, blackish with S modified from gray	>86	24-Jul-17	Sulfur, Alunite, Gypsum	nd	-
<b>L20 bombola</b>	Pisciarelli	L20 high area	high area south of pool, whitish	47	24-Jul-17	Mascagnite, Illite, Amorphous	nd	-
<b>PEXT</b>	Pisciarelli	PEXT	yellowish crystalline Sulfur	95	24-Jul-17	Sulfur (bad pattern)	nd	-
<b>MS 24/7/17</b>	Solfatara	mud pool	mud, mostly dried portion	48.1	24-Jul-17	Sulfur, Alunite, Sanidine, Pyrite, low Amorphous	nd	-
<b>BG 24/7/17</b>	Solfatara	Bocca Grande	Blackish with sulfur	92	24-Jul-17	Sulfur, As species?	nd	-
<b>MS new</b>	Solfatara	new pool	liquid and oily mud	-	24-Jul-17	Minamiite, Alunite, K-Feldspar, Amorphous, Kaolinite? bad pattern	nd	-
<b>Buco 24/7/17</b>	Solfatara	BUCO	orange portion in the hole	-	24-Jul-17	Sulfur, Amorphous. bad pattern	nd	-

<b>MP viadotto 9/17</b>	Pisciarelli	viadotto	dried at the foot valley, mud at the inflow area	49.7	01-Sep-17	Sulfur, Alunite	nd	-
<b>L3 9/17</b>	Pisciarelli	L3 - mud pool	mud from the bubbling point of the pool, drying	63.9-75.6	01-Sep-17	-	nd	-
<b>L1 wall2 zucch 9/17</b>	Pisciarelli	L1 wall	upper part, soft efflorescence	45.1	01-Sep-17	Alunogen (pattern slightly shifted)	nd	-
<b>L1 wall1 9/17</b>	Pisciarelli	L1 wall	between vent and wall 2, white massive with halos	43.7	01-Sep-17	Sulfur, Alunogen	nd	-
<b>L1 vent 9/17</b>	Pisciarelli	L1 vent	blackish-brownish, low Sulfur	>85	01-Sep-17	Sulfur, Alunite, Pyrite	nd	-
<b>L1 wall 1S 9/17_sep bianco</b>	Pisciarelli	L1 wall	sulfur at the wall base	77.5	01-Sep-17	Sulfur, Alunogen	nd	-
<b>L1 wall 1S 9/17_sep S</b>	Pisciarelli	L1 wall	sulfur at the wall base	77.5	01-Sep-17	Sulfur, Alunogen	nd	-
<b>L20 bombola 9/17</b>	Pisciarelli	L20 high area	high area south of pool, low abundance of whitish material	52.9	01-Sep-17	Mascagnite, Alum-(K), Illite	nd	-
<b>MS1 9/17</b>	Solfatara	mud pool	south portion, fine and mellow mud	49.9-48.6	01-Sep-17	Sulfur, Alunite	nd	-
<b>MP L3bocchetta 1.9.17</b>	Pisciarelli	L3 - mud pool	mud from the bubbling point centre of the pool	49.9-48.6	01-Sep-17	-	nd	-
<b>MS2 9/17</b>	Solfatara	mud pool	north part, mud with acicular material and grains	49.9-48.6	01-Sep-17	-	nd	-
<b>MS3 9/17</b>	Solfatara	mud pool	Sulfur into the fracture determined by drying	49.9-48.6	01-Sep-17	-	nd	-

<b>BG 9/17</b>	Solfatara	Bocca Grande	Sulfur, abundant in mushy form	>87.5	01-Sep-17	Sulfur (shifted pattern)	nd	-
<b>MS new 9/17</b>	Solfatara	new pool	level lowering, mushy mud that is drying	63-70	01-Sep-17	Alunite, Pyrite, Alum-(Na), Amorphous	nd	-
<b>L1 S</b>	Pisciarelli	L1 main vent	-	-	18-Sep-17	Sulfur	nd	-
<b>L1 efflorescenza beije_sep rosso</b>	Pisciarelli	L1 main vent	reddish from beije efflorescence	-	18-Sep-17	Alunogen (slightly shifted pattern)	nd	-
<b>L1 efflorescenza beije_sep bianco</b>	Pisciarelli	L1 main vent	white from the beije efflorescence	-	18-Sep-17	Alunogen	nd	-
<b>PINT S</b>	Pisciarelli	PINT	Acicular Sulfur	-	18-Sep-17	Sulfur	nd	-
<b>L20 Camino</b>	Pisciarelli	L20 high area	Sulfur as a crust	-	18-Sep-17	Sulfur, Alunite	nd	-
<b>L20 camino mud + S</b>	Pisciarelli	L20 high area	Sulfur patina on gray clay	94.2	18-Oct-17	Alunite, Sulfur, Amorphous	nd	-
<b>L20 camino mud + S_S</b>	Pisciarelli	L20 high area	Sulfur patina on gray clay	94.2	18-Oct-17	Pyrite, Alunite, Sulfur, Amorphous	nd	-
<b>L20 camino efflorescenza</b>	Pisciarelli	L20 high area	grayish-to-whitish neogenesis	41.5	18-Oct-17	Tschermigite	nd	-
<b>L20 camino S patina</b>	Pisciarelli	L20 high area	Sulfur encrustation, patina	-	18-Oct-17	Sulfur	nd	-
<b>PINT rosso</b>	Pisciarelli	PINT	red clay containing white rounded grain	90.5	18-Oct-17	Alunite, Hematite, Kaolinite, Sanidine	nd	-
<b>PINT rosso_bianco</b>	Pisciarelli	PINT	white rounded grain of the red clay above	90.5	18-Oct-17	Alunite, Kaolinite	nd	-
<b>PINT S tozzo</b>	Pisciarelli	PINT	Sulfur, blocky	88.9	18-Oct-17	Sulfur 01-078-1888	nd	-
<b>PINT rosso palline bianche</b>	Pisciarelli	PINT	white clay grains inside the red clay above	90.5	18-Oct-17	-	nd	-

<b>MP</b>	Pisciarelli	L3 - mud pool	mud at the west border	88.7	18-Oct-17	Alunite, Biotite, Montomorillonite, Clorite, Vermiculite, Pyrite, Sulfur, Sanidine, Amorphous	nd	-
<b>MP_mud decantato</b>	Pisciarelli	L3 - mud pool	mud decanted from water at the bubbling point	84	18-Oct-17	Alunite, Sulfur, Anorthoclase, Amorphous	nd	-
<b>MP_evapo dendritici</b>	Pisciarelli	L3 - mud pool	water at the centre, bubbling point, crystals from evaporation	84	18-Oct-17	Sulfur, Mascagnite, Alunite, Marialite, Oxybiotite, Amorphous	nd	start water sampling from pools
<b>MP_evapo tozzi</b>	Pisciarelli	L3 - mud pool	water at the centre, bubbling point, crystals from evaporation	84	18-Oct-17	Ammonium sulfate (mascagnite), Bormuscovite, Sulfur, Paramelaconite (CuO)	nd	-
<b>L1 vent S cristallino</b>	Pisciarelli	L1	Sulfur crystals from various point of the wall	-	18-Oct-17	Sulfur (pattern 2283)	nd	-
<b>L1 vent S cristallino_substr</b>	Pisciarelli	L1	substratum of the Sulfur	-	18-Oct-17	Sulfur, Alunite, Pyrite	nd	-
<b>L1 vent S patina</b>	Pisciarelli	L1 vent	yellow patina	95.2	18-Oct-17	Sulfur	nd	-
<b>L1 parete S</b>	Pisciarelli	L1 wall, base	fine acicular crystals at the base	89.6	15-Nov-17	Sulfur	nd	-
<b>L1 pareteEFF</b>	Pisciarelli	L1 wall, upper part	soft white efflorescence	34.5	15-Nov-17	Alunogen, Alum-(K), Sulfur	nd	-
<b>L1 pareteEFF_impurità</b>	Pisciarelli	L1 wall, upper part	soft whitish efflorescence	34.5	15-Nov-17	Alunite (with Cr?), Alunogen	nd	-
<b>L1 parete crosta</b>	Pisciarelli	L1 wall, medial part	hard-to-friable white encrustation	37	15-Nov-17	Alum-(K), Alunite (likely with Cr?)	nd	-
<b>L30 mud</b>	Pisciarelli	L30	beige mud in a cm-wide hole filled by water	41.7	15-Nov-17	Alunite, Amorphous, bad pattern	nd	-

<b>L3 acqua_decantata</b>	Pisciarelli	L3 - mud pool	mud decanted from water at the bubbling point nearby L1	85	15-Nov-17	Sulfur, Alunite, Mascagnite, Biotite, Amorphous	nd	-
<b>L3 acqua_evaporata</b>	Pisciarelli	L3 - mud pool	water at the bubbling point nearby L1, crystals from evaporation	85	15-Nov-17	Mascagnite, Gypsum, Boromuscovite and other difficult to define	nd	-
<b>L3 mud</b>	Pisciarelli	L3 - mud pool	mud, nearby PEXT	87	15-Nov-17	Alunite, Pirite, Feldspar, Sulfur, Illite, Amorphous, bad pattern	nd	-
<b>L19 geiser</b>	Pisciarelli	L19	gray mud nearby geiser and fine flowing water	90	15-Nov-17	Alunite, Pyrite, high Amorphous content. bad pattern low crystallinity	nd	-
<b>L1 vent S_S</b>	Piciarelli	L1 vent	sulfur at main fumarol	94.7	14-Dec-17	Sulfur	nd	-
<b>L1 vent S film_all</b>	Piciarelli	L1 vent	substratum of sulfur main, fumarol	94.7	14-Dec-17	Sulfur, Pyrite, Alunite, Amorphous	nd	-
<b>L20 camino S</b>	Piciarelli	L20	Sulfur	77.8	14-Dec-17	Sulfur, Alunite, Amorphous	nd	-
<b>L20 crema</b>	Piciarelli	L20	Cream-like	-	14-Dec-17	Alunite, Amorphous	nd	-
<b>L30 mud</b>	Piciarelli	L30	beije mud in a cm-wide hole filled by water	42.1	14-Dec-17	Alunite, Sulfur, Amorphous. bad pattern	nd	-
<b>L3 acqua_decantato</b>	Piciarelli	L3 - mud pool	mud decanted from water at the bubbling point nearby L1	84.5	14-Dec-17	Sulfur, Alunite, Pyrite, Titanite, Amorphous	nd	-
<b>L3 acqua_cristallizzato</b>	Piciarelli	L3 - mud pool	water at the bubbling point nearby L1, crystals from evaporation	84.5	14-Dec-17	Mascagnite, Tschermigite, Letovicite, Mohrite, Biotite	nd	-
<b>L3 mud MP</b>	Piciarelli	L3 - mud pool	mud, nearby PEXT	77.4	14-Dec-17	Pyrite, Sulfur, Alunite, Sanidine, Amorphous	nd	-

<b>L19 Geiser mud</b>	Piciarelli	L19	mud, between Geisers	-	14-Dec-17	Alunite, Sulfur, Plagioclase, Amorphous	nd	-
<b>L19 Geiser marrone_all crosta</b>	Piciarelli	L19	uppermost Geiser, bulk, brown crust	95.3	14-Dec-17	Alunite, Pyrite (greigite), Amorphous, Quartz?	nd	-
<b>L19 Geiser marrone</b>	Piciarelli	L19	uppermost Geiser, brown material from above sample	95.3	14-Dec-17	Alunite, Sanidine, Phlogopite, Amorphous	nd	-
<b>L19 Geiser crema_whole</b>	Piciarelli	L19	uppermost Geiser, cream-like, bulk	95.3	14-Dec-17	Alunite, Amorphous	nd	-
<b>L19 Geiser crema_imp bianco</b>	Piciarelli	L19	uppermost Geiser, cream-like, whitish from the above sample	95.3	14-Dec-17	Pyrite, Alunite, Amorphous	nd	-
<b>Geiser bianco (anche un po' arancio)</b>	Piciarelli	Geiser	Back wall, white wall toward L60,	-	14-Dec-17	Alunite, Quartz, Amorphous	nd	-
<b>Geiser arancione</b>	Piciarelli	Geiser	orange	-	14-Dec-17	Jarosite, Alunite, Amorphous	nd	-
<b>Geiser rosso</b>	Piciarelli	Geiser	nearby the main output, reddish	-	14-Dec-17	Jarosite, Alunite, Fe-hydroxides	nd	-
<b>MP acqua polla =L3 acqua</b>	Piciarelli	L3 - mud pool	grayish water, crystals from evaporation	85.4	18-Jan-18	Mascagnite, Letovicite	nd	-
<b>MP mud</b>	Piciarelli	L3 - mud pool	blackish mud	77.1	18-Jan-18	Alunite, Sulfur, Pyrite, Anorthoclase, Amorphous	nd	-
<b>L1 vent S</b>	Piciarelli	L1 vent	crystallizing sulfur	94	18-Jan-18	Sulfur, Pyrite	nd	-
<b>L1 ventparete S</b>	Piciarelli	L1 wall	diffuse crystalline sulfur on the wall nearby the vent	89.9	18-Jan-18	Alunogen, Sulfur	nd	-
<b>L1 parete verde</b>	Piciarelli	L1 wall	greenish portions within whitish part	72.5	18-Jan-18	-	nd	-

<b>PINT S_puro</b>	Piciarelli	PINT	Blocky and dendritic sulfur	93.4	18-Jan-18	Sulfur	nd	-
<b>PINT S_bulk</b>	Piciarelli	PINT	Blocky and dendritic sulfur	93.4	18-Jan-18	Sulfur	nd	-
<b>PINT rosa</b>	Piciarelli	PINT	pinkish material	93.4	18-Jan-18	Feldspatoid? Very high abundance of Amorphous. bad pattern	nd	-
<b>L20 vent mud</b>	Piciarelli	L20	blackish-greenish mud on whitish material	95.8	18-Jan-18	Alunite, Pyrite, Amorphous	nd	-
<b>L19 vent Geiser S</b>	Piciarelli	L19 Geiser	blackish-greenish mud on whitish material	95.8	18-Jan-18	-	nd	-
<b>L20 camino mud</b>	Piciarelli	L20	dried mud esfoliar	81	18-Jan-18	Alunite, Amorphous	nd	-
<b>L70 S</b>	Piciarelli	L70	Sulfur on chimney at the base of the collapsed slope	68	18-Jan-18	Sulfur	nd	-
<b>L70 eff</b>	Piciarelli	L70	efflorescence uppermost on the wall source of L70S	-	18-Jan-18	Alunogen, Tschermingite, Amorphous	nd	-
<b>L60 Geiser acqua</b>	Piciarelli	L60	limpid water from bubbling aquifer into a hole back to the Geiser, crystals from evaporation	93.6	18-Jan-18	Tschermingite, Gypsum	nd	-
<b>L60 Geiser S</b>	Piciarelli	L60	Sulfur within the hole above in which the aquifer is bubbling	-	18-Jan-18	Sulfur	nd	-
								-
<b>MP acqua polla =L3 acqua</b>	Piciarelli	L3 - mud pool	turbid, grayish water, crystals from evaporation	94.1	16-Feb-18	Tschermigite, Mascagnite	nd	-

<b>MP</b>	Piciarelli	L3 - mud pool	gray mud	74.1	16-Feb-18	Alunite, Sulfur, Pyrite, orthoclase, Amorphous	nd	-
<b>L30 fiori</b>	Piciarelli	L30	beije efflorescence nearby the cm-wide hole	40.7	16-Feb-18	Alunogen, Quartz	nd	-
<b>L30 eff1</b>	Piciarelli	L30	beije efflorescence on the wall nearby the cm-wide hole	40.7	16-Feb-18	Alunogen plus other but very complicated pattern	nd	-
<b>L30 eff2</b>	Piciarelli	L30	beije efflorescence on the wall nearby the cm-wide hole	40.7	16-Feb-18	-	nd	-
<b>CIN1a1_grigio</b>	Cinofilo	CIN	uppermost part, gray portion in the whitish material	-	16-Feb-18	Pyrite, Sulfur, Sanidine, Amorphous	nd	-
<b>CIN1a1_bianco</b>	Cinofilo	CIN	uppermost part, whitish material	-	16-Feb-18	Titanium oxide, Opal, Amorphous	nd	-
<b>CIN2 crema</b>	Cinofilo	CIN	uppermost part, cream-like whitish material	-	16-Feb-18	Titanium oxide (Al), Opal, Amorphous	nd	-
<b>F1 CIN duro</b>	Cinofilo	CIN	low hot site, hard encrustation	96.2	16-Feb-18	Alunogen, Zeolites, Sanidine.	nd	-
<b>F1 CIN S</b>	Cinofilo	CIN	low hot site, yellow sulfur	96.2	16-Feb-18	Sulfur	nd	-
<b>F1 CIN2 ara</b>	Cinofilo	CIN	low hot site, orange concretion	96.2	16-Feb-18	Jarosite	nd	-
<b>CIN1 b eff arancione</b>	Cinofilo	CIN	low hot site, orange concretion, at the base	53.6	16-Feb-18	Sanidine, Gypsum, Clay interlayer	nd	-
<b>CIN1 b eff bianca</b>	Cinofilo	CIN	low hot site, orange concretion, at the top	53.6	16-Feb-18	Tamarugite, Jarosite, Hexahydrate, Picroparmacolite, Zaherite	nd	-



<b>MP acqua polla =L3 acqua</b>	Piciarelli	L3 - mud pool	turbid, greenish water, crystals from evaporation	84.3	16-Mar-18	Mascagnite, Tschermigite, Letovicite, Muscovite, Sulfur plus other but complicated	nd	-
<b>MP</b>	Piciarelli	L3 - mud pool	gray mud	84.3	16-Mar-18	Alunite, Amorphous, Pyrite, Sanidine, Illite-Montmorillonite	nd	-
<b>PINT S</b>	Piciarelli	PINT	dendritic, encrusted sulfur	94.4	16-Mar-18	Sulfur pure	nd	-
<b>L60 acqua</b>	Piciarelli	L60	clean water in the hole back to the Geiser, deepened aquifer level, crystals from evaporation	92.2	16-Mar-18	Alunogen, <b>Manganese thiocyanate</b> , <b>Akuammine</b> , Aluminium Sulfate	nd	-
<b>L60 S</b>	Piciarelli	L60	Sulfur at the deepened aquifer level in the hole back to the Geiser above	92.2	16-Mar-18	Sulfur	nd	-
<b>L60 S_bianco</b>	Piciarelli	L60	white portion at the deepened aquifer level in the hole back to the Geiser above	92.2	16-Mar-18	Amorphous, Alunite, Sulfur	nd	-
<b>L20 rugine_bianco</b>	Piciarelli	L20	orange-reddish portion on whitish substratum	-	16-Mar-18	Alunite, Amorphous, Pyrite, Illite/Montmorillonite	nd	-
<b>L20 rugine_rosa</b>	Piciarelli	parte alta a sud polla	orange-to-reddish portions of previous sample	-	16-Mar-18	Amorphous, Alunite, Montmorillonite	nd	-
<b>L19 vent N S</b>	Piciarelli	L19	substratum for S, south of L60	-	16-Mar-18	Sulfur, low abundant Alunite	nd	-

<b>L19 vent N S_substrato</b>	Piciarelli	L19	substratum for S, south of L60	-	16-Mar-18	Sulfur, Amorphous, Alunite, Feldspar	nd	-
<b>Cam Caliro</b>	Piciarelli	Geiser	acicular whitish crystals forming an efflorescence at the surface	-	01-Apr-18	Alunogen	nd	-
<b>MP</b>	Piciarelli	L3 - mud pool	gray mud	84.6	22-May-18	Alunite, Sanidine, Pyrite, Sulfur, Amorphous	nd	-
<b>Viadotto</b>	Piciarelli	Viadotto	gray, stratified mud	40.8	22-May-18	Alunite, Sanidine, Pyrite, Sulfur, Amorphous	nd	-
<b>L30 mud</b>	Piciarelli	L30	beije, humid mud in a cm-wide hole	71	22-May-18	Alunite, Amorphous	nd	-
<b>L1 vent S</b>	Pisciarelli	L1 vent	low abundance of Sulfur on the blackish substratum	95.1	22-May-18	Sulfur	nd	-
<b>PINT S</b>	Piciarelli	PINT	dendritic encrustated sulfur	94.8	22-May-18	Sulfur	nd	-
<b>L20 new vent mud</b>	Piciarelli	L20	gray mud around the vent, reddish at the surface	94.9	22-May-18	Alunite, Pyrite, Clay	nd	-
<b>L20 eff beije</b>	Piciarelli	L20, on the east	beije efflorescence, flower-like	-	22-May-18	Alum-(Na), Letovicite	nd	-
<b>L20 eff bianca</b>	Piciarelli	L20, on the east	white efflorescence, flower-like	-	22-May-18	Tamarugite, Feldspar	nd	-
<b>L19 N vent S</b>	Piciarelli	L19	sulfur on greenish-whitish wall	-	22-May-18	Sulfur	nd	-
<b>L60 S</b>	Piciarelli	a monte del Geiser	Sulfur at the water level of the hole above	93.9	22-May-18	Sulfur	nd	-

<b>Geiser ara</b>	Piciarelli	intorno al Geiser	orange exfoliating encrustation		22-May-18	Tschermigite, Jarosite, Amorphous	nd	-
<b>MP</b>	Piciarelli	L3 - mud pool	blackish mud	83.8	26-Jun-18	Alunite, Sanidine, Pyrite, Sulfur, Amorphous	nd	-
<b>MP acqua polla =L3 acqua</b>	Piciarelli	L3 - mud pool	blackish turbid water, crystals from evaporation	83.8	26-Jun-18	Mascagnite, Gypsum, Zeolites	nd	-
<b>MP acqua polla =L3 acqua con residuo</b>	Piciarelli	L3 - mud pool	blackish turbid water, crystals from evaporation	83.8	26-Jun-18	Mascagnite, Gypsum, Zeolites	nd	-
<b>L1-L3 eff suolo</b>	Piciarelli	between pool and L1	orange efflorescence at the soil	-	26-Jun-18	Mascagnite, Zeolite, Letovicite	nd	-
<b>L30 eff</b>	Piciarelli	L30, nearby hole	whitish flower-like efflorescence newby greenish part	-	26-Jun-18	Alunogen, Fe-phosphate? and/or Jarosite	nd	-
<b>L30 eff_blocchetto</b>	Piciarelli	L30, nearby hole	white flower on the greenish portions	-	26-Jun-18	Alunite, Alunogen	nd	-
<b>L30-L1 eff</b>	Pisciarelli	between L30 and L1	soft, whitish	-	26-Jun-18	Alunogen, Chabazite	nd	-
<b>L100 base</b>	Piciarelli	L100, south west of L60	dried mushy efflorescence, at the base of the wall	-	26-Jun-18	Alunite, Alunogen	nd	-
<b>L100 granu</b>	Piciarelli	L100, south west of L60	dried granular efflorescence, medial on the wall	-	26-Jun-18	Alunite, Alunogen	nd	-
<b>L100 eff</b>	Piciarelli	L100, south west of L60	friable encrustation on the granular efflorescence	-	26-Jun-18	Alunite, Alunogen	nd	-

<b>L100 zucc</b>	Piciarelli	L100, south west of L60	sugar-like efflorescence, topmost	-	26-Jun-18	Alunogen	nd	-
<b>MP</b>	Piciarelli	L3 - mud pool	mud	81.6	18-Jul-18	Alunite, Sanidine, Pyrite, Sulfur, Biotite, Amorphous	nd	-
<b>MP acqua polla =L3 acqua</b>	Piciarelli	L3 - mud pool	water, crystals from evaporation	81.6	18-Jul-18	Mascagnite, Sulfur, Biotite	nd	-
<b>L3 schiuma</b>	Piciarelli	L3 - mud pool	foam at the pool limit	81.6	18-Jul-18	Sulfur, Alunite, Mascagnite	nd	-
<b>L1S</b>	Piciarelli	L1 parete	low abundant sulfur	-	18-Jul-18	Sulfur	nd	-
<b>L71S</b>	Piciarelli	L71	low abundant sulfur along the collapsed and mined wall	94.1	18-Jul-18	Sulfur	nd	-
<b>PEXT S</b>	Piciarelli	PEXT	dendritic hair-like sulfur	94.6	18-Jul-18	Sulfur	nd	-
<b>PINT S</b>	Piciarelli	PINT	dendritic hair-like encrustation of sulfur	95	18-Jul-18	Sulfur	nd	-
<b>L20M ara</b>	Pisciarelli	top L20	orange wall along the uppermost pathway	-	18-Jul-18	Tschermigite, Illite/Montmorillonite	nd	-
<b>L60 S</b>	Piciarelli	L60	deepening water level in the hole back to Geiser	-	18-Jul-18	Sulfur	nd	-
<b>L60b acqua</b>	Piciarelli	L60 other	bubbling water between L60 and geiser, crystals from evaporation	-	18-Jul-18	any crystallization	nd	-
<b>MP-viadotto</b>	Piciarelli	between L1, viadotto, pool border	mushy blackish mud	55.3	26-Sep-18	Alunite, Sulfur	3.9-4.5	-

<b>L3 acqua</b>	Piciarelli	L3 - mud pool	water nearby PEXT, crystals from evaporation	94.3	26-Sep-18	Illite/Montmorillonite, Ammonium K sulfate	4.8	-
<b>MP-L3</b>	Piciarelli	L3 - mud pool	black, granular mud	94.3	26-Sep-18	Alunite, Sanidine, Pyrite, Sulfur, Biotite, Amorphous	4.8	-
<b>L3 Geiser</b>	Piciarelli	L3 - mud pool	water nearby the Geiser, crystals from evaporation	80.1	26-Sep-18	Mascagnite, Biotite, Sulfur	5.2	-
<b>L60 S</b>	Piciarelli	L60	deepening water level in the hole back to Geiser	93.9	26-Sep-18	Sulfur	1.6	-
<b>L60 acqua</b>	Piciarelli	L60 other	bubbling water	93.9	26-Sep-18	-	1.6	-
<b>L1vent nero</b>	Piciarelli	L1 vent	low abundant sulfur	95.8	26-Sep-18	Voltaite, Coquimbite, Pyrite	1.3	-
<b>L1 base S</b>	Piciarelli	L1	yellow sulfur at the wall base	-	26-Sep-18	Sulfur	nd	-
<b>L1 parete S</b>	Piciarelli	L1	pale yellow sulfur along the wall	-	26-Sep-18	Sulfur	nd	-
<b>L1 bianco zucc</b>	Piciarelli	L1	sugar-like along the wall	-	26-Sep-18	Alunogen, Alum-(K)	nd	-
<b>PINT S</b>	Piciarelli	PINT	dendritic, encrustated, hair-like sulfur	89.1	26-Sep-18	Sulfur	nd	-
<b>BG</b>	Solfatara	Bocca Grande	strong yellowish encrustation	-	26-Sep-18	Ammonium chloride, Arsenic sulfide (Realgar)	nd	-
<b>BG</b>	Solfatara	Bocca Grande	strong yellowish encrustation	-	26-Sep-18	Ammonium chloride, Arsenic sulfide (Realgar)	nd	-
<b>BG</b>	Solfatara	Bocca Grande	strong yellowish encrustation	-	26-Sep-18	Ammonium chloride, Arsenic sulfide (Realgar)	nd	-
<b>L60b</b>	Piciarelli	L60 other	bubbling milky water, crystals from evaporation	94	30-Oct-18	Potassium Ammonium Aluminum Sulfate Hydrate	1-2	-

<b>L60</b>	Piciarelli	L60 other	milky water, deepened aquifer level, crystals from evaporation	91.8	30-Oct-18	no sample	1-2	-
<b>Fratturina</b>	Piciarelli	between L30-L1	collected spray from a cm-long fracture, crystals from evaporation	95.6	30-Oct-18	Mascagnite	7	-
<b>MP</b>	Piciarelli	L3 - mud pool	gray-black mud with up to cm-sized components	91.2	30-Oct-18	Alunite, Sanidine, Pyrite, Sulfur, Biotite, Amorphous	5	-
<b>L3 acqua</b>	Piciarelli	L3 - mud pool	turbid water, crystals from evaporation	90.5	30-Oct-18	Mascagnite, Sulfur, Clay mineral	5	-
<b>L1 vent</b>	Piciarelli	L1 vent	gray-black without sulfur	95	30-Oct-18	Pyrite, Alunite, Biotite	-	-
<b>L1 S</b>	Piciarelli	L1 base	sulfur at the wall base	-	30-Oct-18	Sulfur	-	-
<b>MP viadotto</b>	Piciarelli	viadotto	mud with water abundance	-	30-Oct-18	Alunite, Sanidine, Sulfur, Amorphous	-	-
<b>L20 camino</b>	Piciarelli	L20	gray mud	91.8	30-Oct-18	Alunite, Pyrite	-	-
<b>L19</b>	Piciarelli	L19	translucid black mud with orange and white crystals	94.8	30-Oct-18	Pyrite, Alunite	-	-
<b>L100S</b>	Piciarelli	L100	sulfur	92.6	30-Oct-18	Sulfur	-	-
<b>L100 nero</b>	Piciarelli	L100	substratum of sulfur	92.6	30-Oct-18	Sulfur, Quartz, Amorphous	-	-
<b>L70</b>	Piciarelli	L70	black material with sulfur	93.3	30-Oct-18	-	-	-
<b>Stufe Pozzo1</b>	Baia	Stufe di Nerone	water from well, crystals from evaporation	76	31-Oct-18	Halite	7.06	-

<b>Stufe spring</b>	Baia	Stufe di Nerone	water springs, crystals from evaporation	78.6	31-Oct-18	Halite	7	-
<b>L60b acqua</b>	Piciarelli	L60 other	bubbling milky water between L60 and geiser, crystals from evaporation	92.6	29-Nov-18	Ammonium sulfite, Alum-(K)	-	-
<b>L60 mud</b>	Piciarelli	L60 wall on the back	plastered grayish mud	-	29-Nov-18	Alunite, Orthoclase, Pyrite	-	-
<b>L3 acqua</b>	Piciarelli	L3 - mud pool	milky grayish water, crystals from evaporation	85.7	29-Nov-18	Mascagnite, Koktaite (sulfate calcium ammonium hydrate)	-	-
<b>MP</b>	Piciarelli	L3 - mud pool	mud with cm-sized components	85.7	29-Nov-18	Alunite, Sulfur, Hydrobiotite, Orthoclase, Pyrite	-	-
<b>PEXT S</b>	Piciarelli	PEXT	S encrustation and crystals	93.7	29-Nov-18	Sulfur	-	-
<b>L1 wext</b>	Piciarelli	L1, external side, proxy to L30	efflorescence and encrustation through a fracture of the white wall	-	17-Jan-19	Alunite, Alunogen	-	-
<b>G19 fango ess</b>	Piciarelli	G19, mud vent	dried gray-greenish mud from a vent opened nearby the Geiser and the pool	91.5	17-Jan-19	Alunite, Amorphous	-	-
<b>G19 fango fluido</b>	Piciarelli	G19, mud vent	gray fluid mud coexisting with the above	91.5	17-Jan-19	Alunite, Mascagnite, Amorphous.	-	-
<b>G19-S</b>	Piciarelli	G19, mud vent	yellowish encrustation on the mud above	91.5	17-Jan-19	Sulfur, Alunite	-	-

<b>G19_ara</b>	Piciarelli	G19, mud vent	brow-orange encrustation on the mud above	91.5	17-Jan-19	Clairite, Mohrite	-	-
<b>G19_eff bianca</b>	Piciarelli	G19, mud vent	whitish encrustation coexisting with the G19 materials above	91.5	17-Jan-19	Alunite, Jarosite?, Amorphous	-	-
<b>MP</b>	Piciarelli	L3 - mud pool	decanted mud sample from the east side of the pool	88.6	17-Jan-19	Alunite, Sulfur, Pyrite, Orthoclase.	-	-
<b>L3</b>	Piciarelli	L3 - mud pool	water from the east side of the pool, crystals from evaporation	88.6	17-Jan-19	Mascagnite, Gypsum, Koktaite.	-	-
<b>PEXT_S</b>	Piciarelli	PEXT	sulfur	94.6	17-Jan-19	Sulfur	-	-
<b>G19_aranew</b>	Piciarelli	G19, mud vent	orange-brownish encrustation	84.1	24-Jan-19	Mascagnite, alunogen, Zaherite, Amorphous.	-	-
<b>G19_red</b>	Piciarelli	G19, mud vent	reddish encrustation	84.1	24-Jan-19	Titanium oxide, Amorphous.	-	-
<b>L100 ara</b>	Piciarelli	L100	orange-brownish encrustation, southeast L60	-	24-Jan-19	Alunogen, Voltaite, Coquimbite, Zaherite, Gypsum.	-	-
<b>L60-polla1</b>	Piciarelli	L60	whitish substratum for algae, wall of the hole, top part	40	06-Feb-19	Alunite, Amorphous.	-	-
<b>L60-polla2</b>	Piciarelli	L60	whitish substratum for algae, wall of the hole, lowermost part	40	06-Feb-19	Natroalunite, Silicon Oxide, Amorphous.	-	-
<b>L1wall incrostazione</b>	Piciarelli	L1 wall	fissure with algae on which granular	34	06-Feb-19	Alum-(K)	-	-



			encrustation occurs					
<b>PEXT_parte verde</b>	Piciarelli	PEXT	brownish film on whitish substratum with algae, greenish part	34	06-Feb-19	Potassium Ammonium Aluminum Sulfate Hydrate, Alunite, Amorphous.	-	-
<b>PEXT_parte marroncina</b>	Piciarelli	PEXT	brownish film on whitish substratum with algae, brown part	34	06-Feb-19	Alunite, Sulfur, Amorphous.	-	-
<b>PEXT_parte biancastra</b>	Piciarelli	PEXT	brownish film on whitish substratum with algae, white part	34	06-Feb-19	Alunite, Amorphous.	-	-
<b>MP</b>	Piciarelli	L3 - mud pool	mud decanted water, east side of the pool	88	06-Feb-19	Alunite, Sulfur, Pyrite, Orthoclase, Amorphous.	-	-
<b>L3</b>	Piciarelli	L3 - mud pool	water, east side of the pool, crystals from evaporation	88	06-Feb-19	Mascagnite, Clay mineral	-	-
<b>G19</b>	Piciarelli	G19, mud vent	encrustation	-	06-Feb-19	Alunite, Mascagnite, Voltaite, Zaherite, Amorphous.	-	-

Table S2 – Vibration modes and related tentative assignment of functional groups, and mineral attribution for selected samples by DRIFT-FTIR investigations. Alu = alunite, Clay = illite/montmorillonite, Masc = NH<sub>4</sub> - bearing sulfates, am = amorphous, Kao = kaolinite, KAl = alum - (K). ?, uncertain attribution.

SOLFATARA MUDDS					PISCIARELLI MUDDS				
5/6/16	24/7/17	1/9/17	Tentative Assignment	PH	6/16	15/11/17	14/12/17		
4603	4606	h	Al-OH	Alu	4608h	-	4593h		
4529	4528	x	Al-OH		4518x	-	-		
-	4311	x	Mg-OH	Clay?	-	-	-		
3973x	3975p	3980x		Alu	3971x	3976x	3973x		
-	-	-		Clay	3629	3622	3622		
-	3692p	-			-	-	-		
3587h	3620x	h	v1OH?	Clay?	-	-	-		
3505p	3506p	3506p	v1OH	Alu	3506p	3510p	3512p		
3486p	3486p	3484p	v1OH	Alu	3483p	3486p	3486p		
3284h	3318h	3275h	v1OH?	Clay?	3268h	-	-		
-	-	-			-	3333h	3322h		
2338p	2339p	2337p			2340p	2338p	2338p		
2287	2291x	2289x	2v <sub>3</sub> SO <sub>4</sub>	Alu	2285	-	-		
-	-	-			-	2289	-		
2220	2223x	x	2v <sub>3</sub> SO <sub>4</sub>	Alu	2225h	-	-		
2176p	2176p	2176p	2v <sub>3</sub> SO <sub>4</sub>	Alu	2175x	2178x	2176x		
2119p	2117p	2116p	2v <sub>3</sub> SO <sub>4</sub>	Alu	2112p	2118x	2117x		
1990p	1981x	1988p		Opal?	1997h	1985h	1980h		
1870p	1872p	1873p		Opal?	1868p	1870p	1869p		
1635p	1629p	1628p	δHOH		1630p	1637p	1629p		
1436x	1431p	1432x	v <sub>4</sub> NH <sub>4</sub>	Masc?	1431-00	1437p	1434p		
1215	1219x	1215h	Si-O	Clay, am?	1216x	1216	1219		
1159	1158x	1158x			1158	-	1156		
1102p	1101p	1102p	v <sub>3</sub> SO <sub>4</sub>	Alu	1095p	1099p	1099p		
1027p	1028p	1028p	v <sub>1</sub> SO <sub>4</sub>	Alu	1027p	1028p	1028p		
949p	943p	947p	AIAIOH	Clay?	-	-	-		
-	-	-	AIAIOH	Clay?	929h	934h	936h		
-	871p	-			-	-	-		

  

SOLFATARA NEW HOLE				
MSnew 5/17	MSnew 7/17	MSnew 9/17	Tentative assignment	Phase
4605x	4608	4613x+4586	Al-OH	Alu
4523p	4525x	4525p	Al-OH	Kao
4308?	4307?	4307x	Mg-OH	-
3976p	3980p	3976p		Alu
3694p	3695p	3695p	v1OH	Kao
3668p	3666p	3667p	v1OH	Kao
3652p	3651p	3651p	v1OH	Kao
3620p	3620p	3620p	v1OH	Kao
3510x	3510p	3509x	v1OH	Alu
3483p	3483p	3483p	v1OH	Alu
3354x	-	-	vOH	KAl
3006x	-	-	vOH	KAl
3410-2650H	3418-2650H	3410-2650H	vOH	-
2460h	-	-	vOH	KAl
2338x	2338p	2338x	-	-
2290x	2291p	2288x	2v <sub>3</sub> SO <sub>4</sub>	Alu
2221x	2228x	2222x	2v <sub>3</sub> SO <sub>4</sub>	Alu
2176x	2177p	2176x	2v <sub>3</sub> SO <sub>4</sub>	Alu
2115x	2115p	2116x	2v <sub>3</sub> SO <sub>4</sub>	Alu
1994hx	1995hx	1991hx		Opal?
1875p	1870p	1874p		Opal?
1630p	1637p	1631p	δHOH	
1435p	1431p	1431p	v <sub>4</sub> NH <sub>4</sub>	Masc?
1228p	1229p	1231p	v <sub>3</sub> OH+ v <sub>3</sub> SO <sub>4</sub>	Alu, KAl
1156x	1158x	1158x		
1095p	1097p	1092p	v <sub>3</sub> SO <sub>4</sub>	Alu, KAl
1026p	1029p	1028p	v <sub>1</sub> SO <sub>4</sub> , Si-O	Alu, Kao
1008x	1010x	1012x	Si-O	Opal? Kao

-	850p	-		S?	-	-	-
798p	801h	801p	SiO	am, clay	796p	796p	793p
682p	685p	686p	v <sub>4</sub> SO <sub>4</sub>	Alu	680p	684p	683p
634p	636p	632p	v <sub>4</sub> SO <sub>4</sub>	Alu	634p	631p	629p
604p	602p	604p	γOH	Clay	601p	603p	602p
-	576x	-					
526x	526	527p	Al-O-Si	Clay	-	524	526
470x	469p	467p	Si-O-Si	S? Clay?	-	469	470
-	-	-			-	-	-

938x	939p	938x	OH	Kao
912p	916p	915p	OH	Kao
795p	794p	795p	Si-O	Opal? Kao
685p	688p	684p	Al-O, v <sub>4</sub> SO <sub>4</sub>	Kao, Al, KAl
631p	635p	631p	Si-O, v <sub>4</sub> SO <sub>4</sub>	Kao, Al
601p	604p	601p	δOH	Kao
532p	546-529	540p	Al-O-Si	Kao, clay
474p	473p	481-467p	Si-O-Si	Kao, clay
433p	435p	432p	Si-O	Kao

Table S3 – Selected whole-rock geochemistry of multi-phases materials sampled at different locations (i.e., sample name as in Fig. 1) within the Pisciarelli and Solfatara areas and at different times. MDL indicates the detection limit for major, trace, C and S contents.

Name	Method	MDL	MPS0517	MP	MSnew	MS	L20camino	L1 beije	MS new	MS2	MP	L19Geiser	BG	L3 MP
Sampling Date			31.5.17	29.6.17	29.6.17	29.6.17	18.9.17	18.9.17	1.9.17	1.9.17	15.11.17	14.12.17	20.9.16	14.12.14
SiO <sub>2</sub>	ICP-ES	0.01%	49.43	38.05	49.27	49.59	15.73	3.09	48.71	72.52	59.78	63.33	80.56	56.32
Al <sub>2</sub> O <sub>3</sub>	ICP-ES	0.01%	16.2	10.01	16.04	4.97	2.35	14.67	16.72	3.43	10.38	11.32	1.29	11.85
Fe <sub>2</sub> O <sub>3</sub>	ICP-ES	0.04%	4.02	2.35	3.88	0.29	0.09	3.11	3.79	0.26	2.31	0.78	0.14	3.2
MgO	ICP-ES	0.01%	0.02	0.08	0.02	0.03	<0.01	0.01	0.02	0.04	0.15	0.05	0.04	0.16
CaO	ICP-ES	0.01%	0.08	0.14	0.08	0.08	0.02	0.05	0.07	0.09	0.25	0.03	0.07	0.3
Na <sub>2</sub> O	ICP-ES	0.01%	0.18	0.24	0.18	0.13	0.03	0.03	0.2	0.11	0.34	0.07	0.02	0.42
K <sub>2</sub> O	ICP-ES	0.01%	3.27	2.85	3.32	1.4	0.62	2.84	3.45	0.93	3.34	3.08	0.18	3.9
TiO <sub>2</sub>	ICP-ES	0.01%	0.51	0.35	0.52	0.73	0.34	0.07	0.5	0.71	0.52	0.66	2.35	0.49
P <sub>2</sub> O <sub>5</sub>	ICP-ES	0.01%	0.21	0.1	0.21	0.09	0.03	0.03	0.21	0.07	0.11	0.07	0.03	0.12
MnO	ICP-ES	0.01%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cr <sub>2</sub> O <sub>3</sub>	ICP-ES	0.00%	0.003	<0.002	0.004	<0.002	<0.002	<0.002	0.003	<0.002	0.002	<0.002	0.003	<0.002
Ba	ICP-ES	1 ppm	966	952	975	817	401	69	918	677	1611	967	4261	1789
Ni	ICP-ES	20 ppm	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Sc	ICP-ES	1 ppm	4	3	4	3	<1	2	4	2	3	4	2	4
LOI	ICP-ES	-5.10%	25.8	45.6	26.2	42.5	80.7	76	26	21.7	22.5	20.4	14.7	22.9
Sum	ICP-ES	0.01%	99.8	99.89	99.8	99.89	99.96	99.94	99.8	99.9	99.87	99.86	99.8	99.86
Be	ICP-MS	1 ppm	<1	1	<1	1	<1	<1	2	<1	4	5	2	5
Co	ICP-MS	0.2 ppm	10.6	4.2	8.3	0.7	<0.2	1.4	9.3	0.6	3.4	0.4	0.6	5.7
Cs	ICP-MS	0.1 ppm	4.6	6.4	4.6	4.5	3.3	1.1	4.3	7.3	9.8	23.4	14.5	9.3
Ga	ICP-MS	0.5 ppm	22.5	10.2	23.8	6.9	2.1	9.5	22.7	4.2	9.1	15.6	0.8	10.7
Hf	ICP-MS	0.1 ppm	8.8	5.1	8.6	10.2	3.3	0.8	8	11.2	6.6	9.6	11	6.2
Nb	ICP-MS	0.1 ppm	44	24.6	42.6	64.7	21.9	1.9	40.8	66.5	38	61.2	156.1	34.9
Rb	ICP-MS	0.1 ppm	41.5	54.8	39.5	26.5	11.4	22.6	45.9	29.5	73	75.8	26.9	83.7
Sn	ICP-MS	1 ppm	4	3	4	6	3	<1	4	5	3	4	20	3
Sr	ICP-MS	0.5 ppm	654.1	333.8	649.5	159.9	76.1	253.5	650.5	106.4	375.2	275	80.4	449.4
Ta	ICP-MS	0.1 ppm	2.3	1.3	2.3	3.2	1	0.1	2.3	3.3	2	3.1	7.6	1.9

<b>Th</b>	ICP-MS	0.2 ppm	26.9	13	25.1	13.2	5.5	6.7	25.3	12.7	15.5	24.5	8.4	16.3
<b>U</b>	ICP-MS	0.1 ppm	10.4	5.3	9.7	6.6	2.1	0.7	9.5	7.3	6.3	13.8	7.2	6.2
<b>V</b>	ICP-MS	8 ppm	110	58	102	35	16	21	106	24	59	72	54	65
<b>W</b>	ICP-MS	0.5 ppm	5.4	2.4	4.8	7	2.5	<0.5	4.3	8.1	4.8	5.1	18.7	3.9
<b>Zr</b>	ICP-MS	0.1 ppm	406	217.4	390.5	447.8	136	32.5	373.5	490.4	291.6	444.7	497.9	278.6
<b>Y</b>	ICP-MS	0.1 ppm	5.5	4.6	5.5	4.4	1.3	0.5	5.4	4.5	6	3.7	7.8	6.6
<b>La</b>	ICP-MS	0.1 ppm	74.8	31.6	69.6	24.1	12.3	24.3	71.7	16.8	37.2	46.2	11.2	40.9
<b>Ce</b>	ICP-MS	0.1 ppm	123.4	50.4	116.2	36.5	20.2	35	125.1	27.5	57.9	70.7	9.8	65.3
<b>Pr</b>	ICP-MS	0.02 ppm	12.05	4.71	11.17	3.45	1.76	2.29	12.08	2.62	5.53	5.22	0.86	5.94
<b>Nd</b>	ICP-MS	0.3 ppm	38.9	13.9	36.8	11.1	4.9	4	37.5	9.3	17.4	11.9	3.3	19.3
<b>Sm</b>	ICP-MS	0.05 ppm	5.37	2.14	5.18	1.82	0.51	0.54	5.33	1.5	2.48	1.15	0.78	2.59
<b>Eu</b>	ICP-MS	0.02 ppm	1.01	0.48	0.93	0.32	0.12	0.1	1.06	0.31	0.55	0.33	0.11	0.64
<b>Gd</b>	ICP-MS	0.05 ppm	3.1	1.44	2.96	1.15	0.39	0.25	3.15	1.04	1.64	0.94	0.97	1.75
<b>Tb</b>	ICP-MS	0.01 ppm	0.37	0.18	0.33	0.15	0.05	0.03	0.35	0.15	0.23	0.14	0.17	0.24
<b>Dy</b>	ICP-MS	0.05 ppm	1.4	0.93	1.33	0.77	0.27	0.16	1.47	0.86	1.14	0.75	1.11	1.18
<b>Ho</b>	ICP-MS	0.02 ppm	0.21	0.17	0.2	0.17	0.05	0.02	0.19	0.18	0.22	0.15	0.26	0.26
<b>Er</b>	ICP-MS	0.03 ppm	0.54	0.49	0.5	0.52	0.19	0.05	0.55	0.52	0.61	0.47	0.86	0.7
<b>Tm</b>	ICP-MS	0.01 ppm	0.08	0.07	0.07	0.07	0.02	<0.01	0.08	0.08	0.09	0.05	0.15	0.11
<b>Yb</b>	ICP-MS	0.05 ppm	0.6	0.59	0.64	0.61	0.19	0.08	0.61	0.58	0.68	0.39	0.93	0.7
<b>Lu</b>	ICP-MS	0.01 ppm	0.09	0.08	0.08	0.08	0.03	<0.01	0.09	0.1	0.11	0.07	0.15	0.11
<b>TOT/C</b>	LECO	0.02%	0.14	0.14	0.16	0.58	0.25	0.09	0.14	1.25	0.21	0.14	0.46	0.15
<b>TOT/S</b>	LECO	0.02%	8.75	31.12	8.42	24.9	>50.00	16.52	8.8	10.56	10.62	4.6	2.03	11.59
<b>Mo</b>	ICP-MS	0.1 ppm	2.8	0.9	3.1	1.8	0.4	0.9	2.3	1.5	1.3	1.3	1.2	1.2
<b>Cu</b>	ICP-MS	0.1 ppm	12.1	9.9	16.6	16.9	1.5	2.5	13.7	11.5	7.9	6	4.9	10.6
<b>Pb</b>	ICP-MS	0.1 ppm	20.9	14.8	20.3	12.9	3.9	12.7	18.1	13.4	19.9	38.4	15.9	20.1
<b>Zn</b>	ICP-MS	1 ppm	8	14	11	4	4	4	11	6	14	7	32	13

<b>Ni</b>	ICP-MS	0.1 ppm	7.8	2.8	8.6	0.2	0.3	0.8	9.1	0.7	2.6	1.3	0	3.1
<b>As</b>	ICP-MS	0.5 ppm	63.2	9.5	69.7	36.4	<0.5	2.9	69.6	25.6	10.9	0.9	6806.6	12.9
<b>Cd</b>	ICP-MS	0.1 ppm	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.2	<0.1
<b>Sb</b>	ICP-MS	0.1 ppm	19.9	0.2	11.7	3.5	0.1	<0.1	15.2	3.5	0.2	0.2	6	0.3
<b>Bi</b>	ICP-MS	0.1 ppm	0.5	0.3	0.7	1.2	0.1	0.3	0.5	1	0.2	0.1	0	0.2
<b>Ag</b>	ICP-MS	0.1 ppm	0.3	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
<b>Au</b>	ICP-MS	0.5 ppb	12.1	<0.5	4.4	<0.5	<0.5	1.4	0.8	4.4	0.6	1.3	334.3	0.8
<b>Hg</b>	ICP-MS	0.01 ppm	50	41.95	>50.00	>50.00	12.75	2.9	>50.00	42.67	24.98	15.28	50	33.86
<b>Tl</b>	ICP-MS	0.1 ppm	2.1	1.5	2.3	0.3	<0.1	0.7	2	0.2	1.1	<0.1	0	1.7
<b>Se</b>	ICP-MS	0.5 ppm	<0.5	0.8	1.1	1.1	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5