



**TABLE OF SAMPLING SITES
PROVIDING DETAILS
FOR UPPER TISA TEST AREA**

Deliverable 3.2.1



PROJECT TITLE

Sediment-quality Information, Monitoring and Assessment System to support transnational cooperation for joint Danube Basin water management

ACRONYM

SIMONA

PROJECT DURATION

1st June 2018 to 1st May 2021, 36 months

DATE OF PREPARATION

30/10/2019

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1. INTRODUCTION

WP3 has in its tasks the activity 3.2. "Planning sampling points for 3 test areas and for DRB baseline network", scheduled to be completed in the third period of the project, respectively fifth period for the DRB baseline network.

The objective was to establish in three test sites representing different hidrological conditions and environmental pressures in the Danube River Basin 10 sites where sampling of suspended and bottom sediments would be performed according to the **transnational harmonized sample protocol** developed within WP4. The collected samples, ideally sampled by an accredited sampler, would then be adequately stored and delivered to the reference laboratory of SIMONA project, which will carry out analyses of heavy metals and their compounds, as well as the organic substances in accordance with the list of HSs and laboratory standards established in the **transnational harmonized laboratory protocol** developed also within WP4 in the third period of SIMONA project.

In establishing the representative 10 sampling points for each test area of the SIMONA project, there were analysed the following selection criteria, settled in:

- ◆ ISO 5667 - 12:2017
- ◆ ISO 5667 - 17:2008
- ◆ Guidance Document No. 25
- ◆ TNMN monitoring sites criteria

These criteria were discussed and completed with new criteria during the workshop organized in Baia Mare (Romania), in July 2019 and further on in Sofia (Bulgaria) in October 2019, where weights/priorities have been assigned.

2. CHARACTERISATION OF THE UPPER TISA TEST AREA

The Lapus Catchment is located in northwestern Romania and is a tributary to Somes River, which is a tributary to Tisa River. Its northeastern part is characterized by the presence of a volcanic mountainous range, renowned for a long history of ore mining and processing, resulting in heavy metal and industrial pollution. The two depression areas are characterized by mainly agricultural activities, which contributes to the overall sediment pollution.

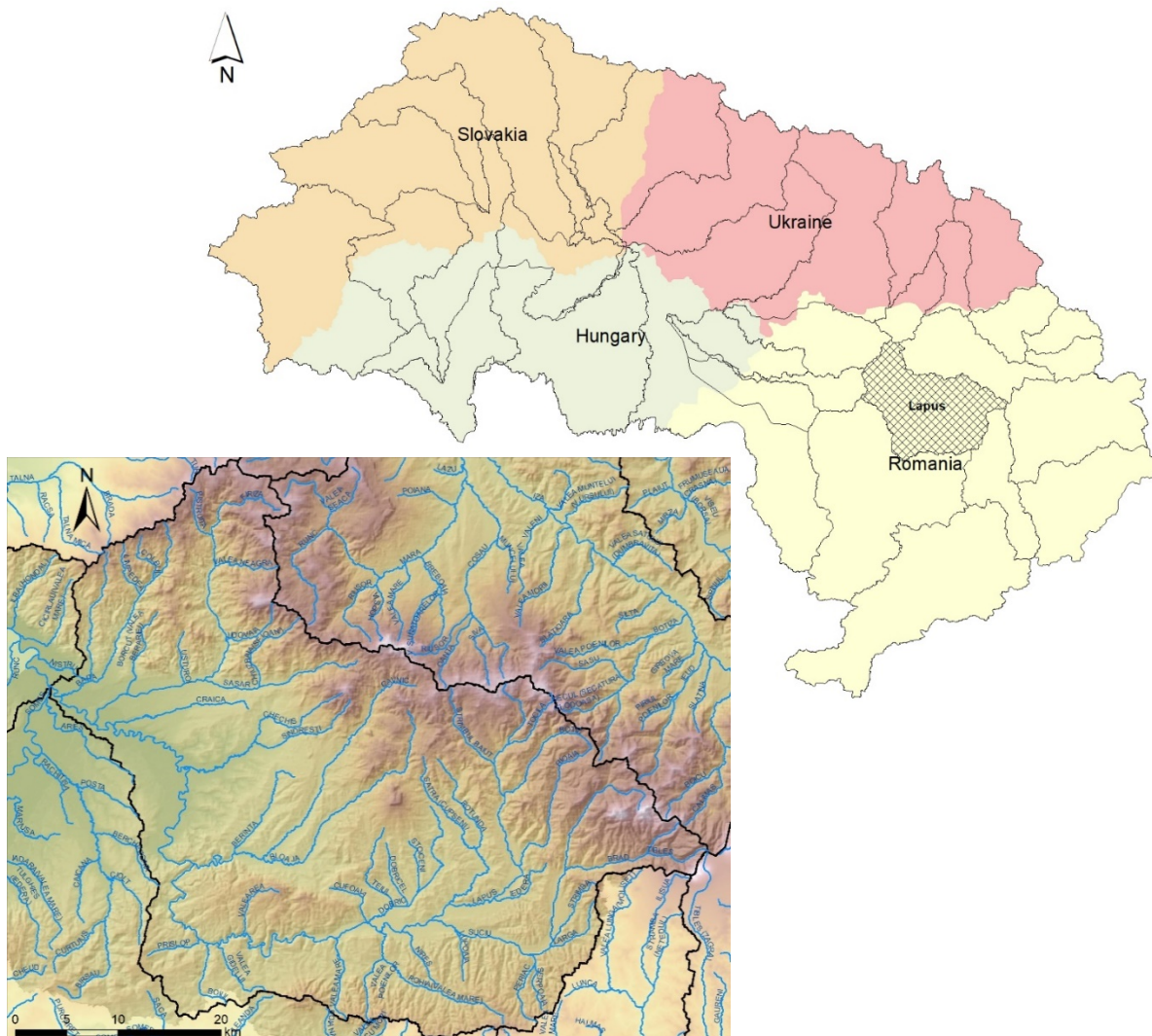


Fig 1 Location of Lapus Catchment in the Upper Tisa area

3. DESCRIPTION OF THE SAMPLING SITES

The sampling sites in Upper Tisa test region were selected in agreement with the project partners in the countries crossed by the Upper Tisa Catchment area (Romania, Slovakia, Ukraine and Hungary) – Fig.1. Finally, 7 sampling points were selected from the sampling locations of the Romanian ASP on Lapus River and its tributaries and 2 new proposed points on Lapus River and one on Baita river. The points are located on Lapus River and its tributaries and have been approved by the Romanian Water Authority (ASP in SIMONA project). The characteristics of the selected sample points are shown in Table 1 and their overall spatial distribution in Fig 2.

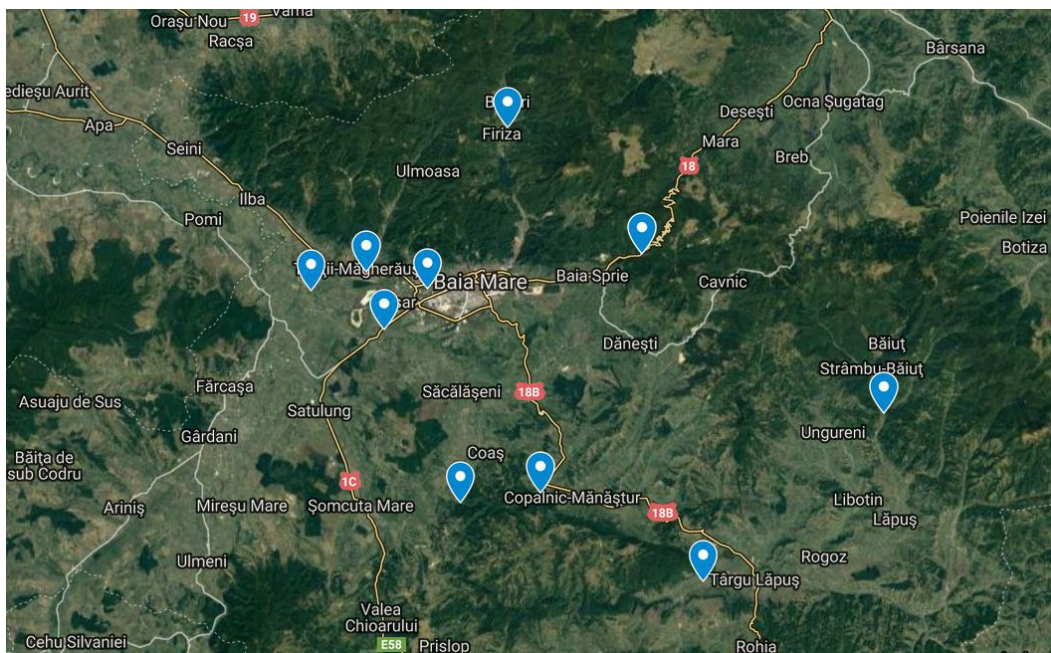


Fig 2 Overall view of the sediment sampling points in Upper Tisa test area

Table 1 Selected sediment sampling stations in Upper Tisa test area

Nr.	Code	Name of the river	Name of the site	WGS Long	WGS Lat	Owner of water monitoring data	Owner of sediment monitoring data	Responsible for sampling	Existent archive water, sediment monitoring data	Comment
1.	RORW2-1-66_B2	Lapus	Razoare	23,80821	47,45237	ANAR	SIMONA Prj	TUCN	Only water	
2.	RORW2-1-66-16_B1A	Cavnic	Copalnic	23,64414	47,51263				Only water	
3.	RORW2-1-66-19-2_B1	Firiza	Firiza	23,61163	47,76158				Only water	
4.	RORW2-1-66_B3	Lapus	Lapusel	23,48536	47,62397				Only water	
5.	RORW2-1-66-19_B1	Sasar	Baia Sprie	23,74728	47,67525				Only water	
6.	RORW2-1-66-19_B1	Sasar	Sasar-av. Baia Mare	23,52936	47,65153				Only water	
7.	SIMONA code	Lapus	Lapus am. Cfl. Botiz	23,99154	47,56745					new
8.	SIMONA code	Lapus	Lapus iesire Chei	23,56298	47,50578					new
9.	SIMONA code	Baita	V. Baita Tautii-Magheraus	23,46771	47,66387					new
10.	RORW2-1-66_B3	Lapus	Lapus-Busag	23,41168	47,65097				Only water	

1. Razoare

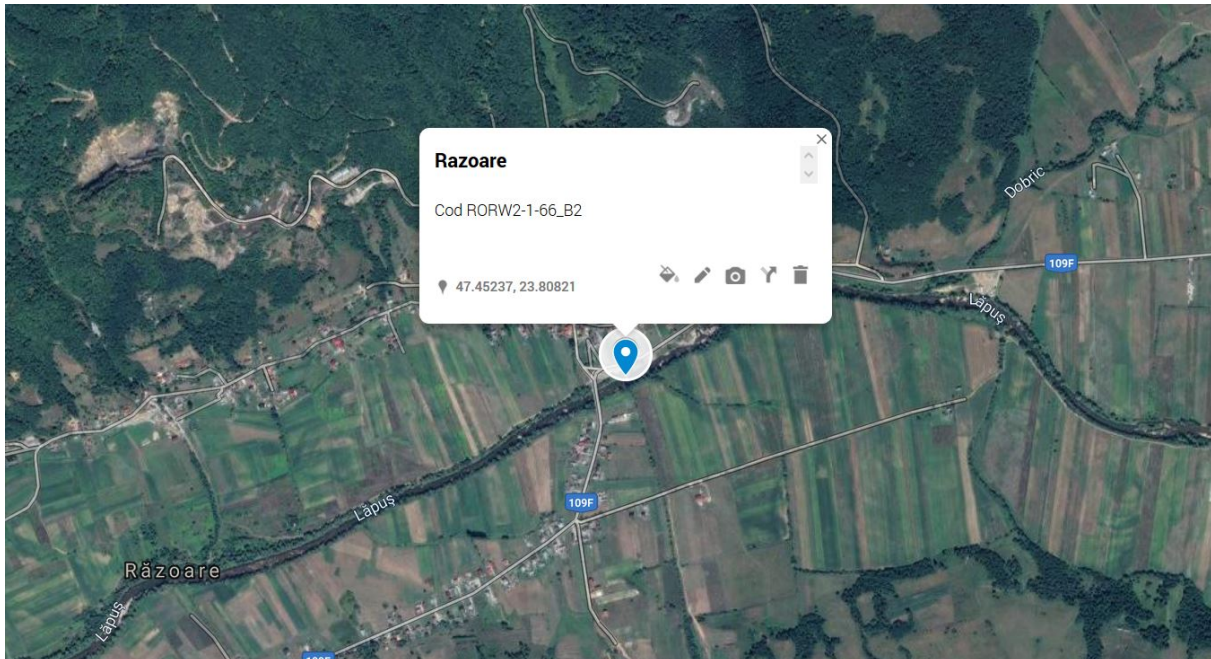


Fig. 3 Sampling point 1 Razoare (Google MyMaps)

Description and reason for selection

Razoare sampling point (fig. 3) is one of the points that samples suspended sediments for physical analysis and water for quality analysis by the Romanian Water Authority.

It's situated on the Lapus River at the exit of the Lapus Depression, combining different types of pollution: mining waste and agricultural sources.

The area is characterized by a high sediment load in the floodplain (from frequent previous floods caused by the narrow gorges downstream) and average sediment loads in the river bottom and as suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N - nutrient regime, SO - oxygen regime and SPP - hazardous substances

2. Copalnic

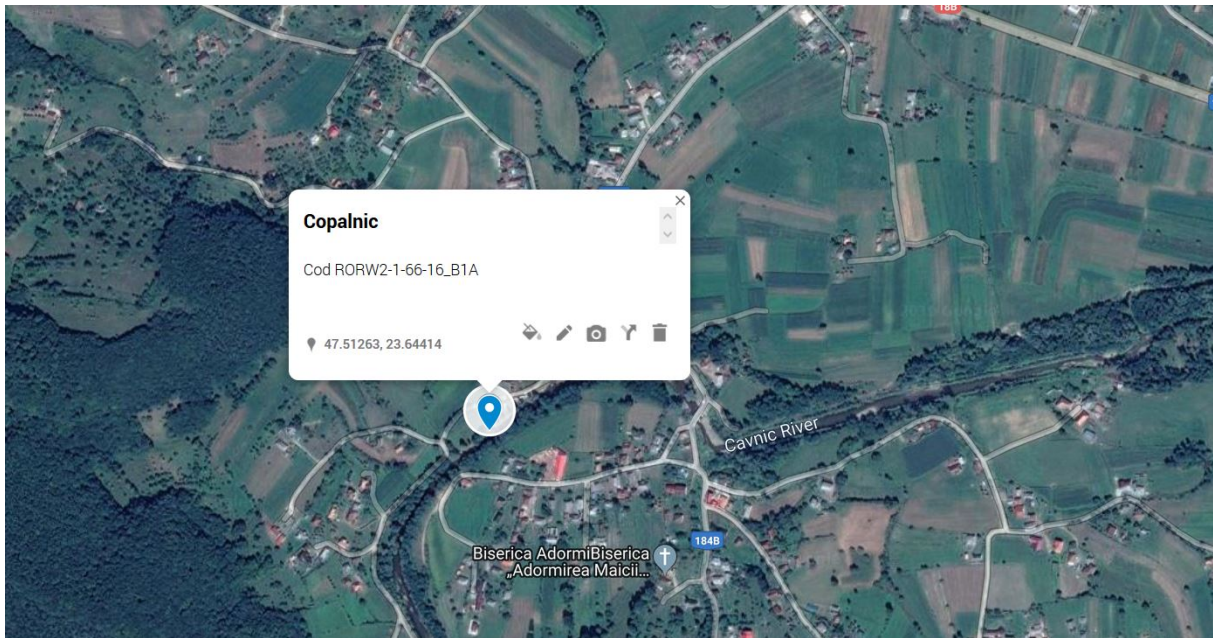


Fig. 4 Sampling point 2 Copalnic (Google MyMaps)

Description and reason for selection

Copalnic sampling point (fig. 4) is one of the points that samples suspended sediments for physical analysis and water for quality analysis by the Romanian Water Authority.

It's situated on the Cavnic (Copalnic) River, at the exit of the Copalnic Depression, combining different types of pollution: mining waste and agricultural sources.

The area is characterized by a high sediment load in the floodplain (from frequent previous floods caused by the narrow gorges downstream) and average sediment loads in the river bottom and as suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: SPP – hazardous substances and HM – hydromorphological alteration

3. Firiza

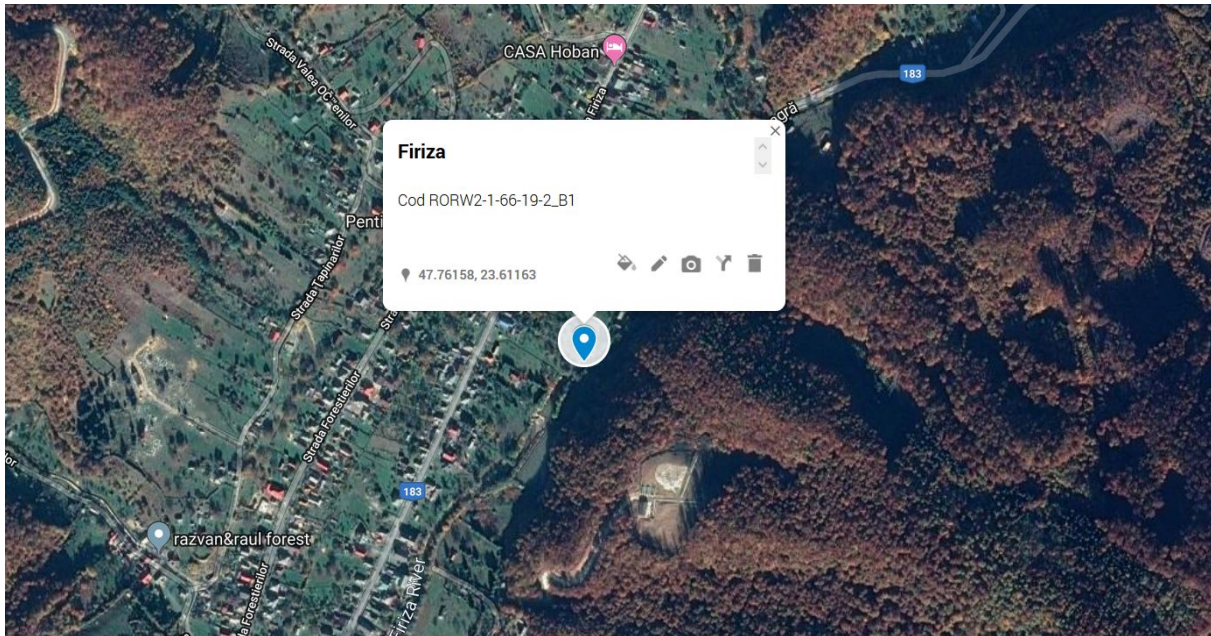


Fig. 5 Sampling point 3 Firiza (Google MyMaps)

Description and reason for selection

Firiza sampling point (fig. 5) is one of the points that samples suspended sediments for physical analysis and water for quality analysis by the Romanian Water Authority.

It's situated on the Firiza River, 3 km above Firiza Reservoir, which is used for water distribution in Baia Mare City.

The area is characterized by a low sediment load in the floodplain, the river bottom and as suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: SPP – hazardous substances and HM – hydromorphological alteration

4. Lapusel

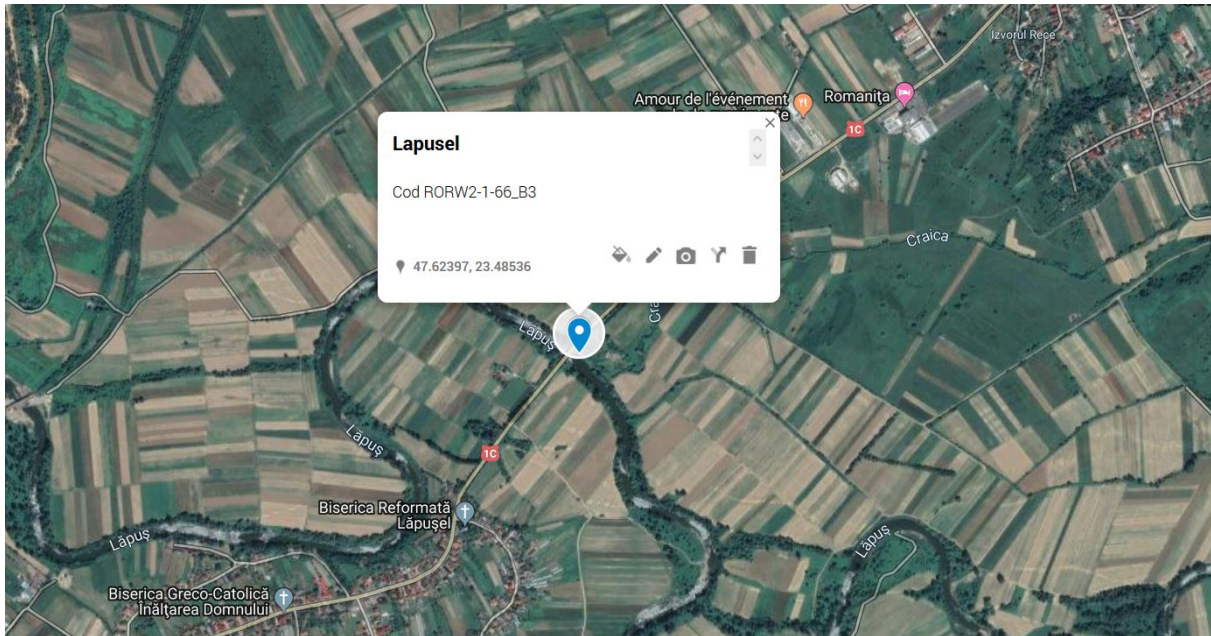


Fig. 6 Sampling point 4 Lapusel (Google MyMaps)

Description and reason for selection

Lapusel sampling point (fig. 6) is one of the points that samples suspended sediments for physical analysis and water for quality analysis by the Romanian Water Authority.

It's situated on the Lapus River, in the middle of the Baia Mare Depression. It's characterized by mostly agricultural pollution sources.

The area is characterized by a very high sediment load in the floodplain (from frequent previous flood) and high sediment loads in the river bottom and as suspended solids, all caused by the river meandering on a very small slope angle.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SO – oxygen regime. SPP – hazardous substances, HM – hydromorphological alteration and CBSD - "the best available section" program

5. Baia Sprie

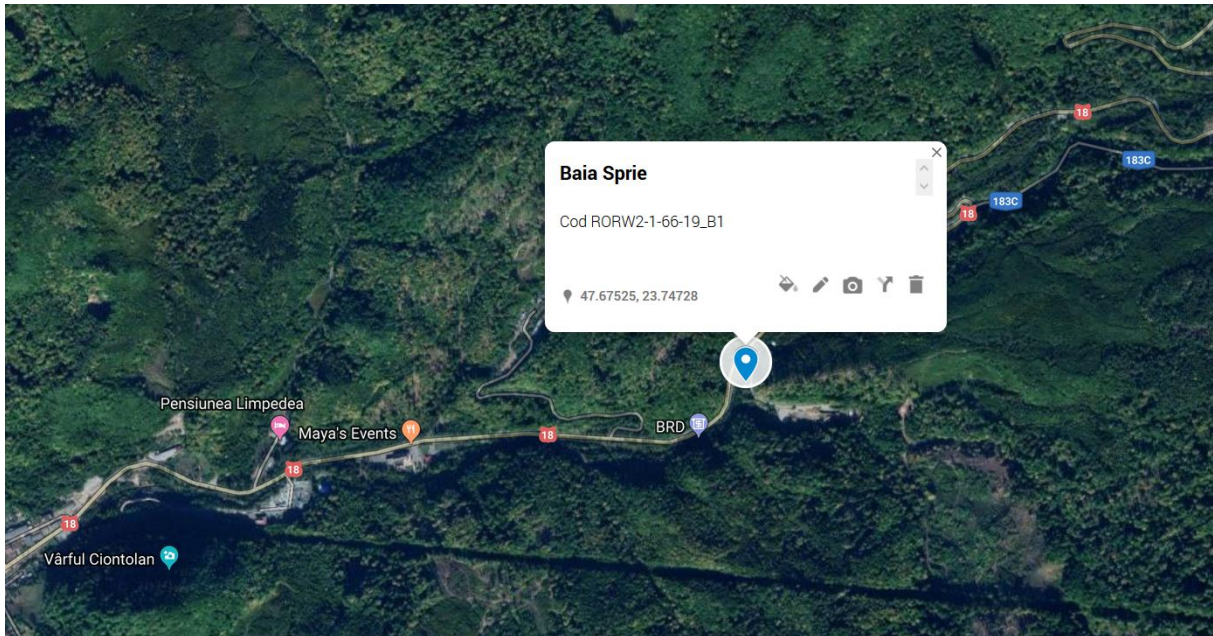


Fig. 7 Sampling point 5 Baia Sprie (Google MyMaps)

Description and reason for selection

Baia Sprie sampling point (fig. 7) is one of the points that samples water quality by the Romanian Water Authority.

It's situated on the Sasar River, at the exit of the mountainous area. It's characterized by mostly mining wastes pollution sources.

The area is characterized by a low sediment load in the floodplain, the river bottom and suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SO – oxygen regime. SPP – hazardous substances and HM – hydromorphological alteration

6. Săsar av. Baia Mare

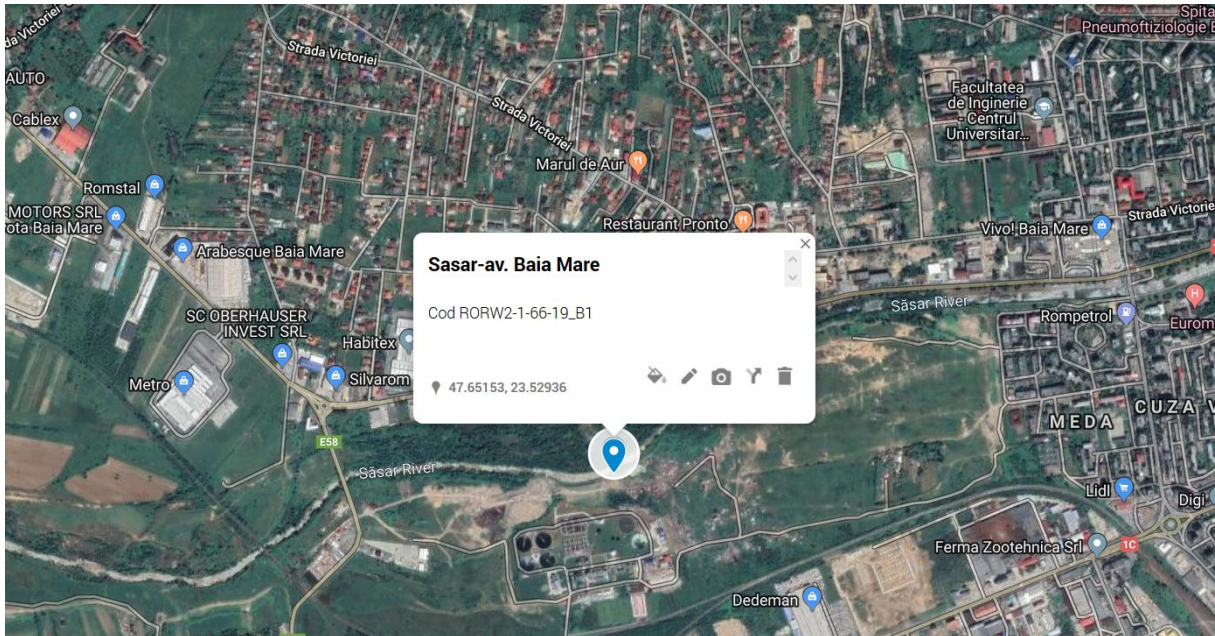


Fig. 8 Sampling point 6 Săsar av. Baia Mare (Google MyMaps)

Description and reason for selection

Săsar av. Baia Mare sampling point (fig. 8) is one of the points that samples water quality by the Romanian Water Authority and also a point of the European Environment Information and Observation Network (EIONET).

It's situated on the Săsar River, at the exit of Baia Mare City. It's characterized by mostly mining wastes and urban pollution sources.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N – nutrient regime, SO – oxygen regime, SPP – hazardous substances, HM – hydromorphological alteration and EIONET Water program.

7. Lapus am. Cfl. Botiz

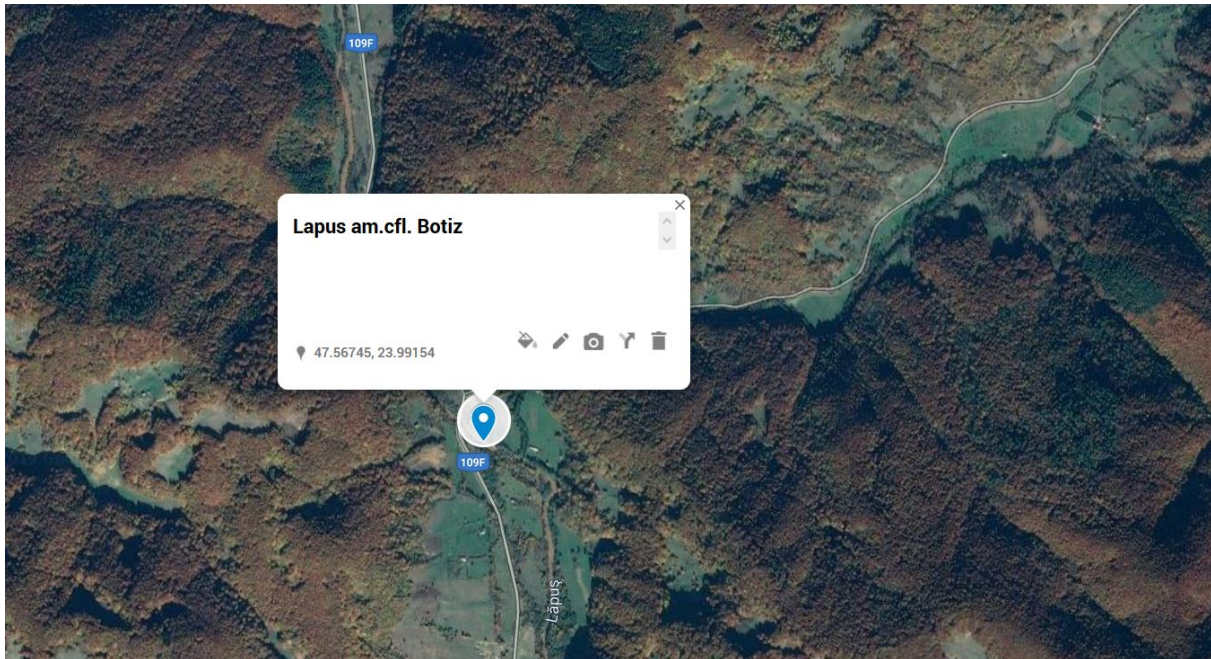


Fig. 9 Sampling point 7 Lapus am. Cfl. Botiz (Google MyMaps)

Description and reason for selection

Lapus am. Cfl. Botiz sampling point (fig. 9) is one of the points that samples water quality by the Romanian Water Authority. It's situated on the Lapus River, at the exit of the mountainous area.

It's characterized by mostly mining wastes pollution sources. It's also an area affected by the Breiner mining gallery accident in March 27, 2018, when acid mining water with heavy metals and sediments escaped into the Lapus River. The accident was caused by high amounts of rain in the previous days.

The area is characterized by a low sediment load in the floodplain and average sediment loads in the river bottom and as suspended solids.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (I) investigation monitoring program

Monitoring program: T – transparence (turbidity)

8. Lapus iesire Chei

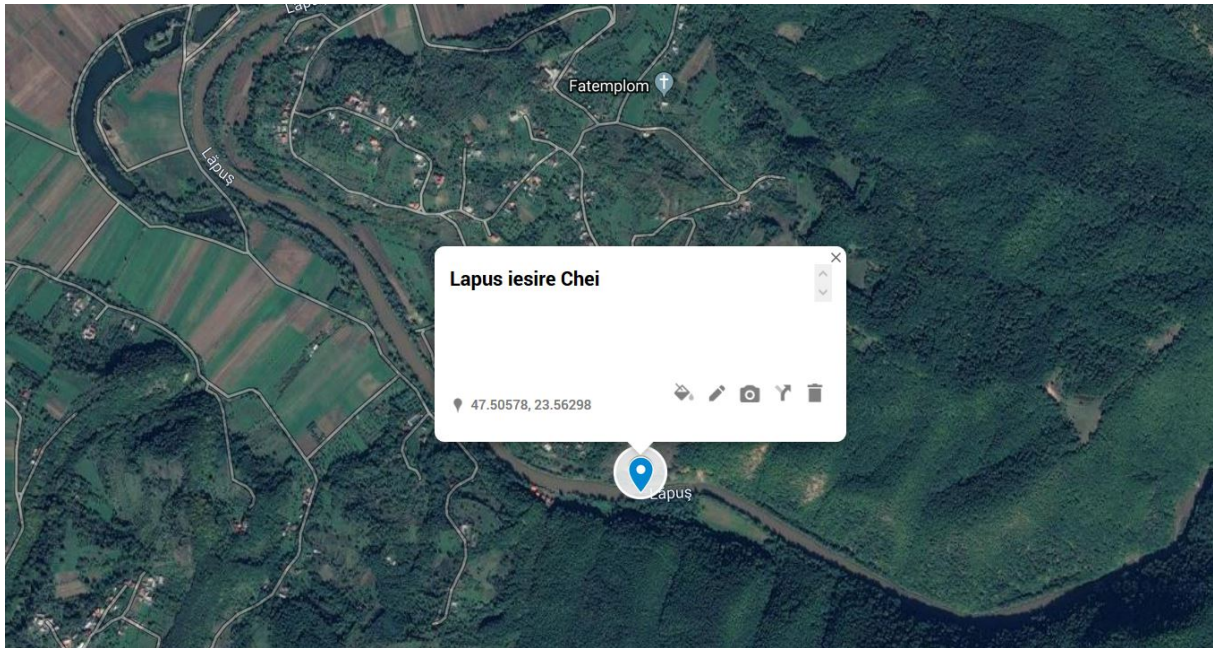


Fig. 10 Sampling point 8 Lapus iesire Chei (Google MyMaps)

Description and reason for selection

Lapus iesire Chei (fig. 10) is one of the proposed points for sediment sampling.

It's situated on the Lapus River at the exit of the Lapusului Gorges, and there is reason to believe that sediments here contain less pollutants than in the Razoare point situated at the entrance of the gorges. The Lapus gorges act as a natural water cleanser, through fast dispersion, dissolution and dilution of water contaminants.

The area is characterized by an average sediment load in the floodplain, sediment loads in the river bottom and suspended solids.

National Administration Romanian Waters monitoring: No

9. V. Baita Tautii-Magheraus

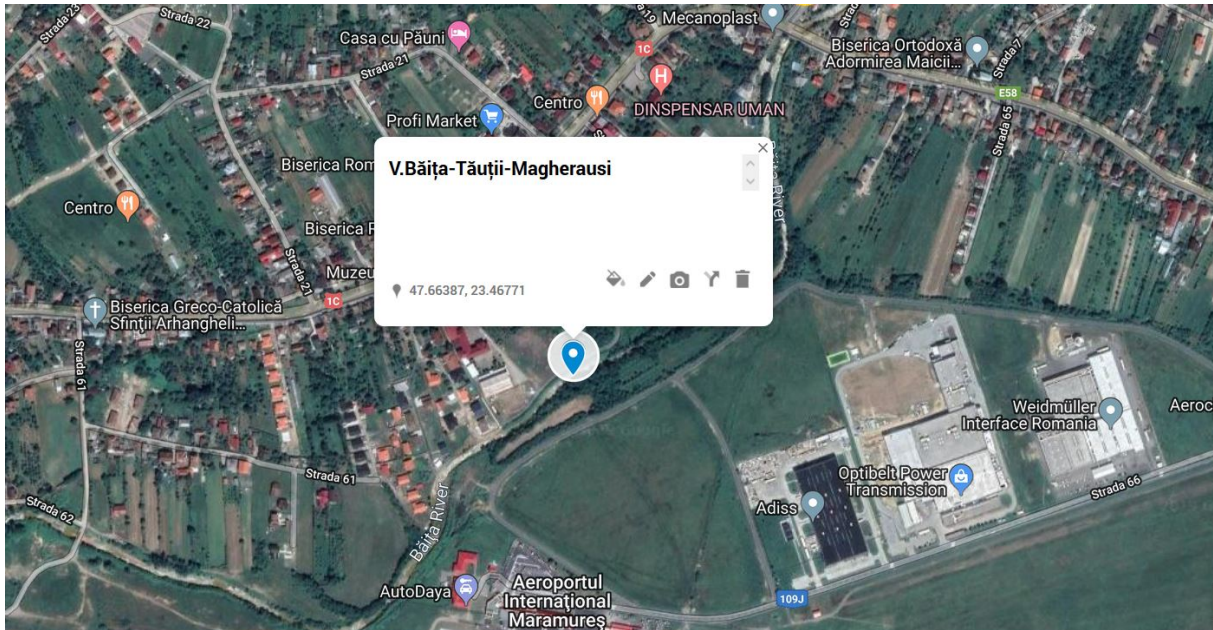


Fig. 11 Sampling point 9 V. Baita Tautii-Magheraus (Google MyMaps)

Description and reason for selection

Baita Tautii-Magheraus (fig 11) is one of the proposed points for sediment sampling.

It's situated on the Baita River, at the exit of the mountainous area. It's characterized by mostly mining wastes pollution sources.

The area is characterized by an average sediment load in the floodplain, sediment loads in the river bottom and suspended solids.

National Administration Romanian Waters monitoring: No

10. Lapus-Busag

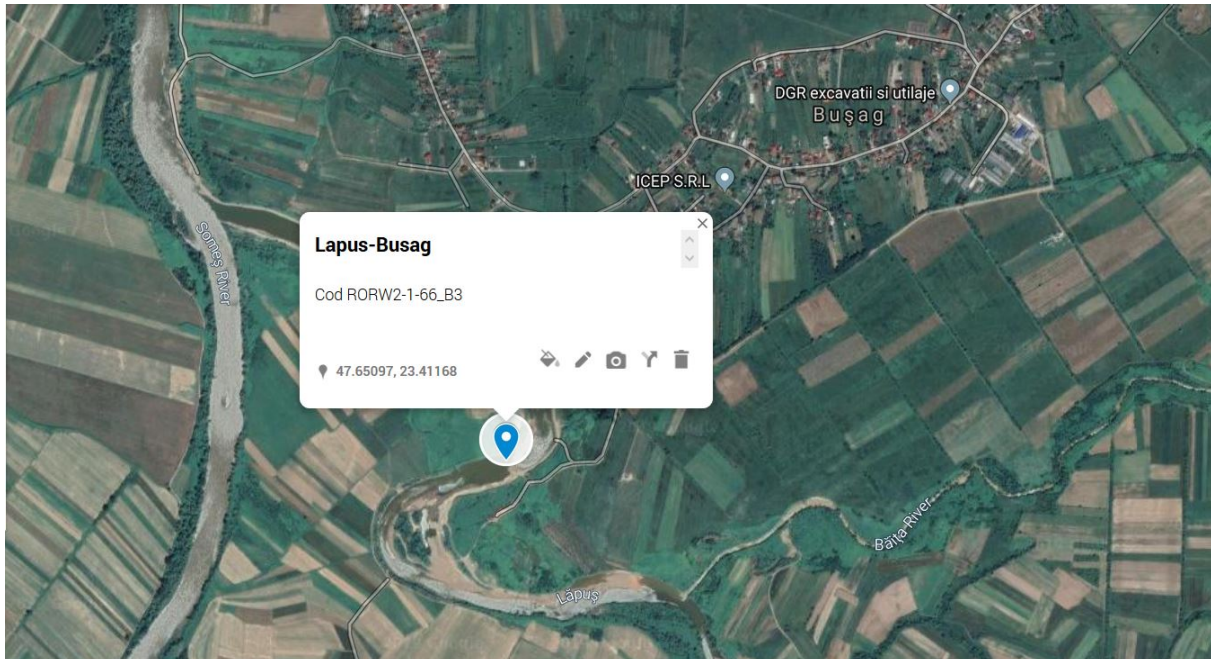


Fig. 12 Sampling point 10 Lapus-Busag (Google MyMaps)

Description and reason for selection

Lapus-Busag sampling point (fig. 12) is one of the points that samples water quality by the Romanian Water Authority and also a point of the European Environment Information and Observation Network (EIONET).

It's situated on the Lapus River, Just before the confluence with Somes River. It's characterized by mostly mining wastes and agricultural pollution sources.

The area is characterized by a very high sediment load in the floodplain (from frequent previous flood) and high sediment loads in the river bottom and as suspended solids, all caused by the river meandering on a very small slope angle.

National Administration Romanian Waters monitoring: Yes

Monitoring type: (O) operational monitoring program

Monitoring programs: N - nutrient regime, SO - oxygen regime. SPP - hazardous substances, HM - hydromorphological alteration and EIONET Water program.

REFERENCES

Planul National de Management actualizat

<http://www.rowater.ro/TEST/Planul%20Na%C8%9B.%20de%20Manag%20actualizat%202016-2021-Sinteza%20Planurilor%20de%20Manag.%20la%20nivel%20de%20bazine-spa%C8%9Bii%20hidrografice%20actualizate/Planul%20National%20de%20Management%20actualizat.pdf>



LIST OF PRIORITY SUBSTANCES AND DANUBE RIVER BASIN SPECIFIC POLLUTANTS APPENDIX 2 OF THE SIMONA SEDIMENT QUALITY SAMPLING PROTOCOL

List of priority substances (PS) in the field of water policy (Part A, Annex I; Directive 2013/39/EU)

	Number in PS directive	WISE-SoE code (CAS/EEA) number¹	Name of priority substance
1	2	CAS_120-12-7	Anthracene
2	5	EEA_32-04-2	Brominated diphenylethers (congener numbers 28, 47, 99, 100, 153 and 154)
3	6	CAS_7440-43-9	Cadmium and its compounds
4	7	CAS_85535-84-8	C10-13-chloroalkanes
5	12	CAS_117-81-7	Di(2-ethylhexyl)phthalate (DEHP)
6	15	CAS_206-44-0	Fluoranthene
7	16	CAS_118-74-1	Hexachlorobenzene
8	17	CAS_87-68-3	Hexachlorobutadiene
9	18	CAS_608-73-1	Hexachlorocyclohexane
10	20	CAS_7439-92-1	Lead and its compounds
11	21	CAS_7439-97-6	Mercury and compounds
12	23	CAS_7440-02-0	Nickel and its compounds
13	26	CAS_608-93-5	Pentachlorobenzene
14	28	EEA_33-56-7	Total PAHs (Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyrene)
15	30	CAS_36643-28-4	Tributyltin-cation
16	34	CAS_115-32-2	Dicofol
17	35	CAS_1763-23-1	Perfluorooctane sulfonic acid and its derivatives (PFOS)
18	36	CAS_124495-18-7	Quinoxifen
19	37	EEA_33-58-9	Dioxins and dioxin-like compounds (7 PCDDs + 10 PCDFs + 12 PCB-DLs)
20	43	EEA_33-57-8	Hexabromocyclododecane (HBCDD)
21	44	EEA_33-50-1	Heptachlor and heptachlor epoxide

List of River Basin Specific Pollutants for the Danube River Basin (ICPDR, 2003)

	CAS number¹	Name of Substance
22	CAS_7440-38-2	Arsenic and its compounds
23	CAS_7440-50-8	Copper and its compounds
24	CAS_7440-66-6	Zinc and its compounds
25	CAS_7440-47-3	Chromium and its compounds

¹ WISE-SoE: European Environment Information and Observation Network reporting systems; CAS: Chemical Abstracts Service; EEA: European Environment Agency registration number (if CAS is not acceptable)

