

SURFACE AND GROUNDWATER POLLUTION IN THE VICINITY OF THE ASH AND SLAG DEPOSIT FROM TURCENI POWER PLANT

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ABSTRACT: In this paper, we pursue the following objectives:

- Definition of the main causes of raising water generated in Turceni village influence ash and slag deposit and other factors that may influence the stability of the area and the perimeter of dwellings.
- Determine the possible influence of water in the ash and slag deposit Ceplea Valley on areas adjacent waters can come from: process water from power stations, surface springs, intake of aquifer influence evapotranspiration etc...
- Basic data and information necessary to reduce the sources that caused the phenomenon of the rise of the water level in the village, as well as control and warning levels in piezometers.

KEY WORDS: slag and ash, groundwater levels, measurements.

1. INTRODUCTION

In terms of geologic area Ceplea - Turceni is located on the southern flank of the Carpathian Foredeep. Southwest flank of the Carpathians Foredeep foundation has Proterozoic rocks - Cretaceous belonging Moesian Platform and the bedspread, the composition of the last cycle evolutionary Badenian-Quaternary deposits thickness of approx. 5mm. Confining ourselves to the last cycle of sedimentation development which totaled approx. 5 million years Turceni the work performed by the specialized unit for the exploration of oil and coal formations identified numerous litho-facial recorded in specialist structural geologist documentation, [1].

Compared to the aforementioned geolitică in terms of hydrogeological aquifer differs following:

- Alluvial aquifers in the Jiu valley;
- Low terrace aquifers in the right Jiu;
- Hilly area aquifers.

2. STATEMENT OF GROUNDWATER LEVELS.

According to discussions with local people affected by raising groundwater levels and measurements and direct observations showed that groundwater was ascending character - Fountain after the years 1995-1996. The first appearance of a spring on the ground - in a sand gravel horizon - was observed on 29 August 1996. Currently source debited approx. 0.5 to 1 l/sec. Dug to 8 m spring to the road in 1945 was watershed, the water being at 3m ground surface. Currently water is ascending character - artesian, hovering low to the ground where he made a uncork hole. Under the foundation wall of the Iliescu's building appeared after 1996 a spring with a current flow of 0.1 l/sec. Lessee declares that the spring rate increases when are operating more energy groups. Moreover, all the water that flows from seepage mentioned having natural drainage to the Jiu river, stagnating at the terrace forming extensive marshes specific vegetation, pulling aside large areas of land, which were cultivable before 1995, [2]. Field collected data on representative wells and springs in Turceni town are shown in Table 1:

Table 1. Observation of drills water levels in the Turceni area

No.	Drill No.	Location	Date	Date	Date	Date	Date	Date
			16.06.2012	21.06.2012	30.06.2012	11.06.2012	12.06.2012	14.06.2012
			Measured value (m)	Measured value (m)	Measured value (m)	Measured value (m)	Measured value (m)	Measured value (m)
1.	F ₁₀₁	Marian Court	3,70	3,80	-		3,70	3,56
2.	F ₁₀₂	Bar	4,80	4,70	4,85			
3.	F ₁₀₃	School	0,30	0,30	0,00			
4.	F ₁₀₄	I.A.S.	3,70	3,90	4,10			
5.	F ₁₀₅	PECO	3,00	3,80	3,85			
6.	F ₁₀₆	PECO	12,6	11,50	10,80			
7.	F ₁₀₇	Surdu Court	0,00	0,00	On surface	On surface	On surface	On surface
8.	F ₁₀₈	Church	9,50	8,60	8,06			
9.	F ₁₀₉	Cemetery	2,15	2,15	2,30			
10.	F ₁₁₀	Iliescu Court	2,30	2,20	2,60	2,20		

Situations like those described above are also many in the area, the local sense, are a consequence of the presence of ash and slag deposit, Coplea Valley, [3]. A potential influence of water infiltration through the foundation soil of ash and slag deposit is based on the result of geotechnical boreholes executed in the embankment footprint deposit indicating the daily presence of sand and gravel in the store. Water infiltration through the foundation soil that is placed deposit has been

provided, then one of the solutions adopted to ensure the stability of the dam and reduce the impact was by drilling decompression downstream of the dam currently operating and impact is not impossible but it is very difficult to demonstrate the pros and cons, [4]. Table 2 shows the chemical analyzes of water samples conducted in 2012 on both compartments and drilling and dump in 1998.)

Table 2. The wells of 101 to 110 in 2012 year

No.	Name of analysis	Well 101	Well 102	Well 103	Well 104	Well 105	Well 106	Well 107	Well 108	Well 109	Well 110
1	Bicarbonate ions HCO ₃ ⁻ mg/dm ³)	249,1	stuffy	196	172,3	167,5	dry	229,2	384,3	without access	188,8
2	Hydrogen ions, pH	7,4		7,5	7,5	7,5		7,5			7,6
3	SO ₄ ⁻² ions (mg/dm ³)	217		220,8	210	217,3		213,4			214
4	Cl ⁻ ions (mg/dm ³)	194,4		191,7	198,8	198		189,4			193,2
5	Mg ²⁺ ions (mg/dm ³)	45,5		43,2	48	43,7		42,6			42,6
6	Salts of ammonium NH ₄ ⁺ ions (mg/dm ³)	0,18		0,12	0,16	0,17		0,13			0,19
7	Total salts	920,6		962,5	941,8	914,6		919,8			921

(mg/dm ³)										
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It appears that track and chemical parameter values divided by the material of the deposits, the great variability and can not give a clear-cut separation between samples from the dump and the valleys and wells or springs that were sampled, the correlation between the hydrodynamic potential sources of food (Ceplea Valley infiltrated warehouse losses from the dump or discharge pipe) and groundwater in the area of Turceni is basically influenced (distorted) to support the movement of water through underground geological structure of the hill, [5].

3. CONCLUSION

From the geomorphological point of view deposit Ceplea is at higher elevation than Turceni village in a hilly area on a geological structure in which alternating layers of sands psamitice impermeable layer of clay. From local reports after approx. 3-4 years after deposition and predilection for years 1996-1997 the town Turceni water levels rose significantly. We mention that local sources existed before the filing of the deposit. The underground water level are currently, under studied perimeter, are for the most part of the surface area, as manifested even artesian. This affects many of the inhabitants of Turceni households. Seepage is limited to sand and gravel layer at the base of the slope (odds 124 - 135m) with a limit of

emergence almost horizontal around 128m share, interrupted by two dry areas where water either missing or is drained.

In conclusion it can be stated definitely that ash and slag deposit Valley Ceplea influences rising water levels in Turceni City areas.

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