

Geo-Hydrodynamics of Bagjata Area and its Significance with Respect to Seasonal Fluctuation of Groundwater

PDF (Size: 1197KB) PP. 683-689 DOI: 10.4236/jwarp.2010.27079

Author(s)

Bijay Singh, A. S. Singh

ABSTRACT

Bagjata area is a part of Singhbhum Shear Zone (SSZ) falling within Survey of India Toposheets No. 73J/6, J/7, J/10 and J/11. The Subarnarekha River, Sankh Nala and Gohala faults are major discontinuities in the area. An attempt has been made to simulate the regional groundwater hydrodynamics. Few dug-wells were monitored for more than a year to find out the seasonal fluctuation changes in the drainage pattern and groundwater level. Groundwater samples were analyzed for physical and chemical analysis. Results show that one of the major discontinuities in the area—the Gohala Fault controls largely the geohydrodynamics of the area. Discharge of groundwater is of effluence type during all the three seasons. The water is safe for drinking as most of the contaminations are much below the permissible limits. No such previous work has been attempted in this area to investigate the groundwater dynamics and hence the selection of few parameters were assumed and taken from similar surrounding aquifer systems for modeling. The groundwater flow was also assumed to be in steady state. The present paper deals with some important aspects related to the hydrological significance of the Bagjata Uranium mining area and its relationship with the local climate, physiography and meteorology. An attempt is also made to simulate the status of groundwater conditions of hard rock aquifers in the region. Further it envisages the necessity of such study being undertaken in the entire SSZ belt to secure precise information about the surface manifestations which govern the groundwater recharge potentiality as well as its quality.

KEYWORDS

Geo-hydrodynamics, Bagjata Groundwater, Singhbhum Shear Zone (SSZ), Gohala Fault, Effluence, Uranium-Copper Mineralization

Cite this paper

B. Singh and A. Singh, "Geo-Hydrodynamics of Bagjata Area and its Significance with Respect to Seasonal Fluctuation of Groundwater," *Journal of Water Resource and Protection*, Vol. 2 No. 7, 2010, pp. 683-689. doi: 10.4236/jwarp.2010.27079.

References

- [1] A. K. Bannerji, "Cross Folding Migmatization and Ore Location along Part of the Singhbhum Shear Zone, South of Tatanagar, Bihar," *Economic Geology*, Vol. 57, No. 1, 1962 pp. 50-71.
- [2] S. B. Bhattacharjee, A. K. Ghosh, L. Bhattacharjee and S. R. Svananda, "Uranium Mineralisation and Trace Element Distribution in the Jaduguda Uranium Deposit, Singhbhum Thrust Belt, Bihar, Contributions to the Ge-ology of Singhbhum," Jadavpur University, Calcutta, 1966, pp. 59-75.
- [3] S. B. Bhattacharjee, A. K. Ghosh, L. Bhattacharjee and S. Bhattacharjee, "Minor Elements in Some Rocks and Minerals of the Rakha Mines Area, Singhbhum, India," *Mineralogical Magazine*, Vol. 36, No. 281, 1968, pp. 671- 675.
- [4] K. L. Bhola, G. R. Udas, N. R. Mehta and G. H. Saha-srabudhe, "Uranium Ore Deposits at Jaduguda in Bihar State India," In: *Peaceful Uses of Atomic Energy, Pro-ceedings of Second Internet Conference*, Vol. 2, 1958, pp. 704-708.
- [5] J. A. Dunn and A. K. Dey, "Geology and Petrology of Eastern Singhbhum and Surrounding Areas," *Memoirs of Geological Survey, India*, Vol. 69, No. 2, 1942.

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[JWARP Subscription](#)[Most popular papers in JWARP](#)[About JWARP News](#)[Frequently Asked Questions](#)[Recommend to Peers](#)[Recommend to Library](#)[Contact Us](#)

Downloads: 402,253

Visits: 1,010,033

[Sponsors, Associates, and Links >>](#)

