

**Z. Mehrabi**

Department of Civil  
Engineering, Faculty of  
Engineering, University of  
Qom, Qom, Iran.

**e-mail:** z.mehrabi@stu.qom.ac.ir

**R. Kamalian**

Department of Civil  
Engineering, Faculty of  
Engineering, University of  
Qom, Qom, Iran.

**e-mail:** ur.kamalian@qom.ac.ir

**M. Babae**

Head of Field Measurement  
Department, Water Researches  
Institute, Tehran, Iran.

**e-mail:** Babae\_mbm@yahoo.com

**E. Jabbari\***

Department of Civil  
Engineering, Faculty of  
Engineering, University of  
Qom, Qom, Iran.

**e-mail:** ehsan.jabbari@gmail.com

**Numerical Study of Local Scour Under the Jet  
Discharging From the Power Plants  
(Case Study: Neka Power Plant)**

*In this paper, the mechanism of scouring caused by turbulent jet out of deep drainage of power plants has been investigated. The flow velocity and discharge flow from these drains are high for fast mixing in the near field area, hence the size of these scours is also vast. Since local sediment may lead to the destruction of coastal structures, as well as the effect of spawning in the near field area, the prediction of a suitable method for estimating the location and depth of these scours in the seabed is very important. The case study is the Neka power plant located in Mazandaran near Neka city. Three-dimensional FLOW-3D model is used for simulation. Comparing and analyzing the results of numerical simulation and field data indicate that the horizontal distance of the deepest scour hole from the discharger is acceptable with a precision of 94% and the maximum depth of the scour hole with a precision of 58% compared to the bathymetry of the Neka substrate.*

**Keywords:** Dewatering marine evacuators; turbulent jet; close field; FLOW-3D numerical model; scouring.

---

\* Corresponding author

Received 20 June 2020, Revised 05 September 2020, Accepted 15 September 2020.

DOI: 10.22091/cer.2021.6541.1225