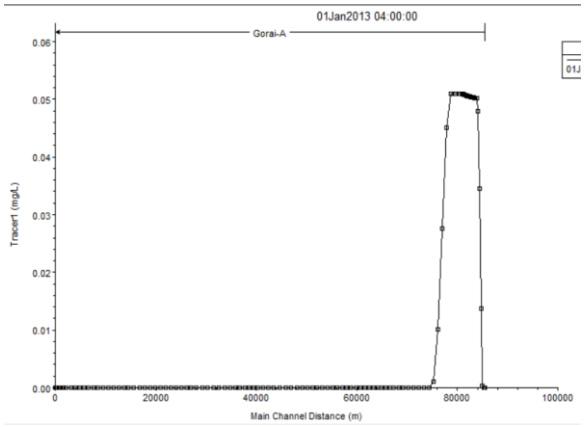
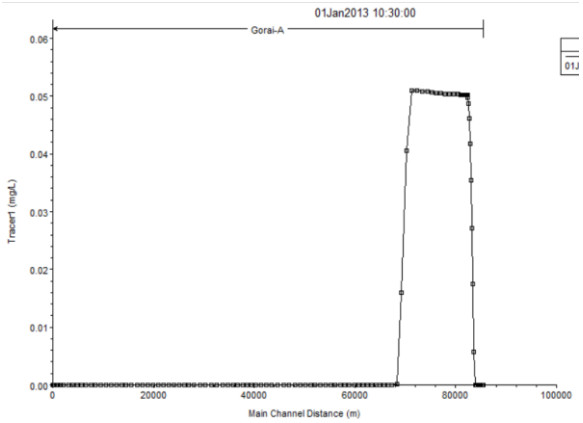
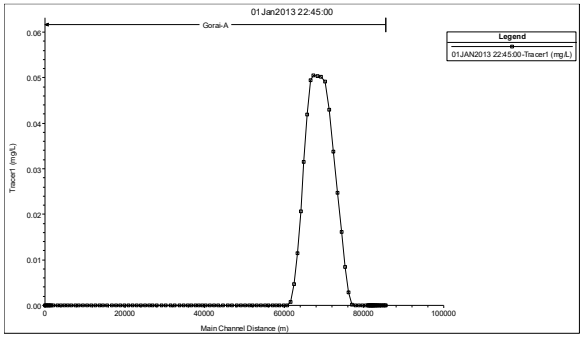
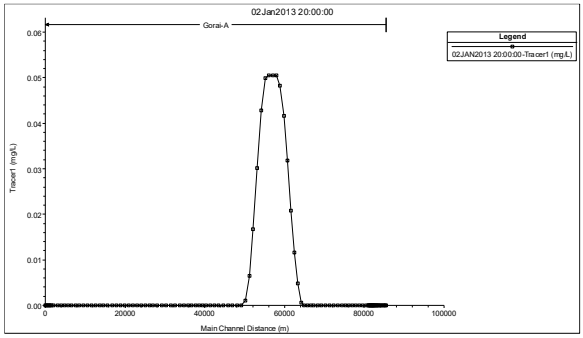
Assignment - Simulation of Water Quality Model

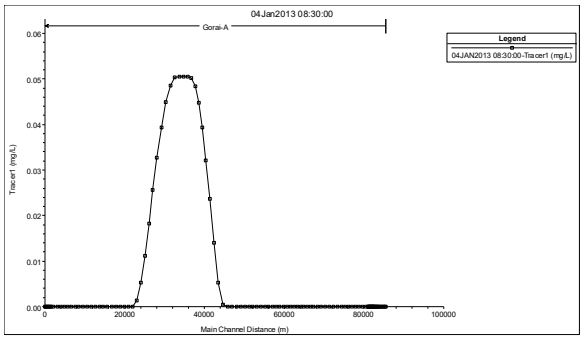
Screenshots:

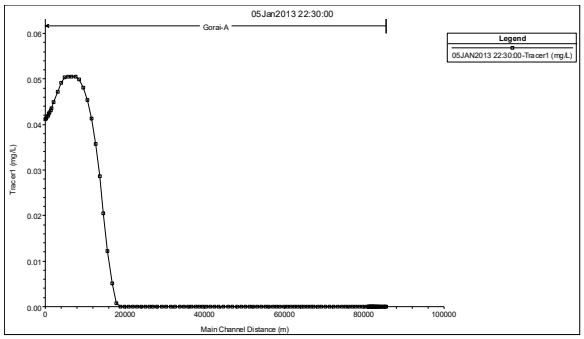












Discussion

The water quality simulation of the Gorai River was carried out using 31 days of simulation data for January 2013. A tracer with a triangular concentration pattern was introduced at the upstream boundary. The concentration remained nearly uniform at first, gradually increased to a maximum, and then decreased again, representing the movement of the tracer through the river reach. The simulated output shows that the tracer was concentrated mainly in the upstream portion of the model, while its concentration became negligible farther downstream.

This pattern can be attributed to the combined action of advection and diffusion. Advection carries the tracer along with the flowing river water, whereas diffusion spreads the tracer and reduces its concentration away from the main plume. The simulation therefore provides a clear representation of how a dissolved substance can be transported and dispersed within a river system. Overall, the model successfully demonstrated the application of HEC-RAS for studying tracer movement and water quality behaviour in the Gorai River.